Package ‘GUIDE’

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**Description**

Function to bring up the main menu for the GUIDE package

**Usage**

```r
GUIDE()
```

**Details**

Entering "GUIDE()" brings up a GUI containing the following menus:
- Forwards
- Futures
- Options
- Swaps
- Stochastic Processes
- Value at Risk
- Bonds and
- Utilities

**Value**

The main menu for the GUIDE package

**Author(s)**

S Subramanian <ssubramanian@ssihl.edu.in>

**References**

ABMPaths

Simulate and plot Arithmetic Brownian Motion path(s)

Description

Function to simulate and plot Arithmetic Brownian Motion path(s)

Usage

ABMPaths()

Details

The user inputs are as follows:
Drift (or mu)
Volatility(or sigma)
Paths
Clicking on the ‘+’ and ‘-’ respectively increases and decreases the values of each of the above three inputs.

Value

A graph of Arithmetic Brownian Motion path(s) for user specified Drift rate (mu) and the Volatility (sigma).

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

GBMPaths, BrownianPaths
basicpayoffs

Plot payoffs / profit and loss of European Call/Put.

Description

Function to Plot payoffs / profit and loss of European Call/Put.

Usage

basicpayoffs()

Details

The user inputs are as follows:
Position: choose Long/Short/both
Option Type: chosen between Call/Put
Plot Type: chosen between Payoff/Profit-and-Loss

Value

Plot of payoffs / profit and loss of European Call/Put.

Author(s)

S Subramanian <ssubramanian@ssihl.edu.in>

References


See Also

trading.menu

bearspreadputs

Profit & Loss plot of bear spread with puts.

Description

Function to plot Profit & Loss of bear spread with puts.

Usage

bearspreadputs()
Details

Short put check box: checking it plots the Profit and loss of a short put position.
Long put check box: checking it plots the Profit and loss of a long put position.
Profit check box: checking it plots the over all Profit and loss of a bear spread with puts.

Value

Profit & Loss plot of bear spread with puts.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

bullspreadcalls, trading.menu

blackscholes

Calculate the Black scholes formula value of a European Call/Put.

Description

Function to calculate the Black scholes formula value of a European Call/Put.

Usage

blackscholes()

Details

The user inputs are as follows:
Exercise style: chosen between European/American
Spot: to be entered in numbers for e.g. 120.50
Strike: to be entered in numbers for e.g. 110.50
Risk free rate per annum: to be entered in decimals. For e.g. 0.05 for 5 per cent
Maturity in number of years: to be entered in decimals. For e.g. 0.25 for a quarter year
Sigma (or Volatility) per annum: to be entered in decimals. For e.g. 0.25 for 25 per cent
Dividend yield: to be entered in decimals. For e.g. 0.02 for 2 per cent
Type of Option: chosen between Call/Put

Value

Calculate the Black scholes formula value of a European Call/Put.
bondchange

Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also
stockoptiontreegui

---

### bondchange

*Calculate the change in the price of a bond for change in yield based on the duration or duration and convexity approximation.*

---

**Description**

Function to calculate change in the price of a bond for change in yield based on the duration or duration and convexity approximation.

**Usage**

bondchange()

**Details**

The user inputs are as follows:
- Face Value: to be entered in numbers for e.g. 1200.50
- Modified Duration: percent per annum
- Convexity: percent per annum
- Change in yield (in basis points): clicking on "+/-" increases/decreases the yield.
- Formula/Approximation: chosen between Duration/Duration and Convexity

**Value**

The change in the price of a bond for change in yield based on the duration or duration and convexity approximation.

**Author(s)**
S Subramanian <ssubramanian@sssihl.edu.in>

**References**
See Also

bondchange, bonddur

Description

Function to calculate the convexity of a bond.

Usage

bondconv()

Details

The user inputs are as follows:
Face Value: to be entered in numbers for e.g. 1200.50
Coupon rate: percent per annum
Discount rate: percent per annum
Maturity: number of years
Note: Clicking on the ‘+’ and ‘-’ respectively increases and decreases the value.
Coupon Payments: chosen amongst Quarterly/Semi-annual/Annual
Frequency of rates: chosen amongst continuous/same as coupon/annual

Value

Duration of a bond.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

bonddur, bondprice
bonddur

Calculate the duration of a bond.

Description

Function to calculate the duration of a bond.

Usage

bonddur()

Details

The user inputs are as follows:
Face Value: to be entered in numbers for e.g. 1200.50
Coupon rate: percent per annum
Discount rate: percent per annum
Maturity: number of years
Note: Clicking on the '+' and '-' respectively increases and decreases the value.
Coupon Payments: chosen amongst Quarterly/Semi-annual/Annual
Frequency of rates: chosen amongst continuous/same as coupon/annual
Duration formula: chosen between Macaulay and Modified

Value

Duration of a bond.

Author(s)

S Subramanian <ssubramanian@ssihl.edu.in>

References


See Also

bondchange, bondprice
bondforwardtreegui  

Plot a Bond Forward Tree

Description

Function to plot a Bond Forward Tree

Usage

bondforwardtreegui()

Details

The user inputs are as follows:
Face Value: to be entered in numbers for e.g. 120.50
Rate per annum: to be entered in percent. For e.g. enter 5.0 for 5 percent
Coupon: to be entered in percent. For e.g. enter 5.0 for 5 percent
u: up move factor- to be entered in decimals. For e.g. 1.25
d: down move factor- to be entered in decimals. For e.g. 0.80
q: probability of up move- to be entered in decimals. For e.g. 0.60
Bond Maturity: Clicking on the ‘+’ and ‘-’ respectively increases and decreases the value.
Forward Maturity: must be lesser than Bond Maturity. Clicking on the ‘+’ and ‘-’ respectively increases and decreases the value.
Plot type: chosen between Bond Forward tree / Bond tree

Value

A plot of Bond Forward Tree with user specified parameters.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

bondtreegui, bondfuturestreegui
bondfuturestreegui

Plot a Bond Futures Tree

Description

Function to plot a Bond Futures Tree

Usage

bondfuturestreegui()

Details

The user inputs are as follows:
Face Value: to be entered in numbers for e.g. 120.50
Rate per annum: to be entered in percent. For e.g. enter 5.0 for 5 percent
Coupon: to be entered in percent. For e.g. enter 5.0 for 5 percent
u: up move factor- to be entered in decimals. For e.g. 1.25
d: down move factor- to be entered in decimals. For e.g. 0.80
q: probability of up move- to be entered in decimals. For e.g. 0.60
Bond Maturity: Clicking on the '+' and '-' respectively increases and decreases the value.
Futures Maturity: must be lesser than Bond Maturity. Clicking on the '+' and '-' respectively increases and decreases the value.
Plot type: chosen between Bond Futures tree / Bond tree

Value

A plot of Bond Futures Tree with user specified parameters.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

bondtreegui, bondforwardtreegui
Description

Function to plot a Bond Option Tree

Usage

bondoptiontree gui ()

Details

The user inputs are as follows:
Type of Option: chosen between Call/Put
Exercise style: chosen between European/American
Face Value: to be entered in numbers for e.g. 120.50
Strike price: to be entered in numbers for e.g. 110.50
Rate per annum: to be entered in percent. For e.g. enter 5.0 for 5 percent
Coupon: to be entered in percent. For e.g. enter 5.0 for 5 percent
u: up move factor- to be entered in decimals. For e.g. 1.25
d: down move factor- to be entered in decimals. For e.g. 0.80
q: probability of up move- to be entered in decimals. For e.g. 0.60
Bond Maturity: Clicking on the ‘+’ and ‘-’ respectively increases and decreases the value.
Option Maturity: must be lesser than Bond Maturity. Clicking on the ‘+’ and ‘-’ respectively increases and decreases the value.
Plot type: chosen between Bond Option tree / Bond tree

Value

A plot of Bond Option Tree with user specified parameters.

Author(s)

S Subramanian <ssubramanian@ssihl.edu.in>

References


See Also

bondtree gui
bondprice

Calculate the price of a bond.

Description

Function to calculate the price of a bond.

Usage

bondprice()

Details

The user inputs are as follows:
Face Value: to be entered in numbers for e.g. 1200.50
Coupon rate: percent per annum
Discount rate: percent per annum
Maturity: number of years
Note: Clicking on the '+' and '-' respectively increases and decreases the value.
Coupon Payments: chosen amongst Quarterly/Semi-annual/Annual

Value

Price of a bond.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

bondchange, bonndur
Function to plot a Bond Tree

Usage

bondtreegui()

Details

The user inputs are as follows:
- Face Value: to be entered in numbers for e.g. 120.50
- Rate per annum: to be entered in percent. For e.g. enter 5.0 for 5 percent
- Coupon: to be entered in percent. For e.g. enter 5.0 for 5 percent
- u: up move factor- to be entered in decimals. For e.g. 1.25
- d: down move factor- to be entered in decimals. For e.g. 0.80
- q: probability of up move- to be entered in decimals. For e.g. 0.60
- Bond Maturity: Clicking on the '+' and '-' respectively increases and decreases the value.
- Plot type: chosen between Bond tree / Rate tree

Value

A plot of Bond Tree with user specified parameters.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

ratetreegui
BrownianPaths

Simulate and plot Brownian Motion path(s)

Description

Function to simulate and plot Brownian Motion path(s)

Usage

BrownianPaths()

Details

The user inputs are as follows:
Paths
Clicking on the ’+’ and ’-’ respectively increases and decreases the values of each of the input.

Value

A graph of Brownian Motion path(s).

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

GBMPaths, ABMPaths

bullspreadcalls

Profit & Loss plot of bull spread with calls.

Description

Function to plot Profit & Loss of bull spread with calls.

Usage

bullspreadcalls()
Details
Long call check box: checking it plots the Profit and loss of a long call position.
Short call check box: checking it plots the Profit and loss of a short call position.
Profit check box: checking it plots the over all Profit and loss of a bull spread with calls.

Value
Profit & Loss plot of bull spread with calls.

Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also
bearspreadputs, trading.menu

butterfly

Profit & Loss plot of butterfly.

Description
Function to plot Profit & Loss of butterfly.

Usage
butterfly()

Details
Long call 1 check box: checking it plots the Profit and loss of a long call position.
Long call 2 check box: checking it plots the Profit and loss of a long call position.
Short two calls check box: checking it plots the Profit and loss of 2 short calls position.
Profit check box: checking it plots the over all Profit and loss of a butterfly.

Value
Profit & Loss plot of butterfly.

Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>
calcgreeks

References

See Also
reversebutterfly, trading.menu

----------
calcgreeks

Calculate the greeks for a European Call/Put.

Description
Function to calculate the greeks for a European Call/Put.

Usage
calcgreeks()

Details
The user inputs are as follows:
Spot: to be entered in numbers for e.g. 120.50
Strike: to be entered in numbers for e.g. 110.50
Maturity in number of years: to be entered in decimals. For e.g. 0.25 for a quarter year
Dividend yield: to be entered in decimals. For e.g. 0.02 for 2 per cent
Type of Option: chosen between Call/Put
Greek: chosen amongst Delta, Gamma, Vega, Theta, Rho
Sigma (Volatility) per annum
Risk free rate per annum:
Clicking "+/−" increases/decreases the value of the above two inputs.

Value
The value of the chosen greek for a European Call/Put.

Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also
blackscholes
captreegui  

*Plot a Cap Tree*

---

### Description

Function to plot a Cap Tree

### Usage

`captreegui()`

### Details

The user inputs are as follows:
- **Face Value:** to be entered in numbers for e.g. 120.50
- **Strike:** to be entered in numbers for e.g. 110.50
- **Rate per annum:** to be entered in percent. For e.g. enter 5.0 for 5 percent
- **u:** up move factor- to be entered in decimals. For e.g. 1.25
- **d:** down move factor- to be entered in decimals. For e.g. 0.80
- **q:** probability of up move- to be entered in decimals. For e.g. 0.60
- **Coupon:** to be entered in percent. For e.g. enter 5.0 for 5 percent
- **Cap Maturity:** Clicking on the '+' and '-' respectively increases and decreases the value.
- **Plot type:** chosen between Cap tree / Rate tree

### Value

A plot of Cap Tree with user specified parameters.

### Author(s)

S Subramanian <ssubramanian@ssihl.edu.in>

### References


### See Also

`ratetreegui, floortreegui`
cashprice

Calculate the Cash price of a T Bond Futures

Description

Function to calculate the Cash price of a T Bond Futures

Usage

cashprice()

Details

The user inputs are as follows:
Quoted Price: e.g. 97.8
Conv. Factor: e.g. 1.06
Acc. Interest: in dollars e.g. 3.50

Value

The Cash price of a T Bond Futures.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

futurescurrency,futurescommodity

cdswap

Calculate the spread in a credit default swap.

Description

Function to calculate the spread in a credit default swap.

Usage

cdswap()
Details

The user inputs are as follows:
Notional: to be entered in numbers for e.g. 1000000
Risk free rate: entered in decimals for e.g. 0.05 for 5 per cent
Maturity in yrs: entered for e.g. 5 for 5 years
Probability of Default: entered in decimals for e.g. 0.02 for 2 per cent
Default assumption: chosen amongst End of Q1/End of half year/End of Q3/End of Year
recovery rate: Clicking on "+/-" increases/decreases the recovery rate.

Value

The spread in a credit default swap.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

curswapvalue,cdswap

curswapvalue

Calculate the value of a fixed-fixed currency swap.

Description

Function to calculate the value of a fixed-fixed currency swap.

Usage

curswapvalue()

Details

The user inputs are as follows:
Notional(Home): to be entered in numbers for e.g. 1000000
Payment rate (Home): entered in decimals for e.g. 0.05 for 5 per cent
Interest rate (Home): entered in decimals for e.g. 0.05 for 5 per cent
Notional(Foreign): to be entered in numbers for e.g. 1200000
Payment rate (Foreign): entered in decimals for e.g. 0.05 for 5 per cent
Interest rate (Foreign): entered in decimals for e.g. 0.05 for 5 per cent
Months for first payment: enter 3 for 3 months
durcoupon

Spot exchange rate: units of home currency per unit of foreign currency. e.g. 1.5 dollars per pound is entered as 1.5
Frequency of spot rates: chosen amongst continuous/quarterly/semi-annual/annual
Number of periods: corresponds to settlement frequency. for e.g. if settlement frequency is chosen as semi-annual, a value of 3 (Number of periods) means three semi-annums. Settlement frequency: chosen amongst quarterly/semi-annual/annual

Value

The Value of a fixed-fixed currency swap.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

irswapvalue, cdswap

---

durcoupon  

Plot the relationship between duration and coupon rate of a bond.

Description

Function to Plot the relationship between duration and coupon rate of a bond.

Usage

durcoupon()

Details

The user inputs are as follows:
  Discount Rate  ( Maturity (Yrs)
Clicking on "+/-" increases/decreases the values of the above two inputs

Value

A Plot of the relationship between duration and coupon rate of a bond.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>
```
durmaturity

References


See Also

bondchange, bondprice


durmaturity

Plot the relationship between duration and maturity of a bond.

Description

Function to Plot the relationship between duration and maturity of a bond.

Usage

durmaturity()

Details

The user inputs are as follows:
  Coupon ( Discount rate (or yield) ( Clicking on "+/-" increases/decreases the values of the above two inputs.

Value

A Plot of the relationship between duration and maturity of a bond.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

bondchange, bondprice
```
duryield

Plot the relationship between duration and yield of a bond.

Description
Function to Plot the relationship between duration and yield of a bond.

Usage
duryield()

Details
The user inputs are as follows:
- Coupon
- Maturity (Yrs)
Clicking on "+/−" increases/decreases the values of the above two inputs.

Value
A Plot of the relationship between duration and yield of a bond.

Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also
bondchange, bondprice

eurodollar
Calculate the value of a eurodollar futures contract price from the CME IMM Quote.

Description
Function to calculate value of a eurodollar futures contract price for notional of 1 mn from the CME IMM Quote.

Usage
eurodollar()
Details

The user inputs are as follows:
CME Quote: e.g. 97.8

Value

The value of a eurodollar futures contract price for notional of 1 mn from the CME IMM Quote.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

futurescurrency, futurescommodity

floortreegui

Plot a Floor Tree

Description

Function to plot a Floor Tree

Usage

floortreegui()

Details

The user inputs are as follows:
Face Value: to be entered in numbers for e.g. 120.50
Strike: to be entered in numbers for e.g. 110.50
Rate per annum: to be entered in percent. For e.g. enter 5.0 for 5 percent
u: up move factor- to be entered in decimals. For e.g. 1.25
d: down move factor- to be entered in decimals. For e.g. 0.80
q: probability of up move- to be entered in decimals. For e.g. 0.60
Coupon: to be entered in percent. For e.g. enter 5.0 for 5 percent
Floor Maturity: Clicking on the '+' and '-' respectively increases and decreases the value.
Plot type: chosen between Floor tree / Rate tree

Value

A plot of Floor Tree with user specified parameters.
**forwardcommodity**

**Author(s)**
S Subramanian <ssubramanian@sssihl.edu.in>

**References**

**See Also**
ratetreegui, captreegui

---

**forwardcommodity**  
*Calculate the forward value of a commodity.*

**Description**
Function to calculate the forward value of a commodity.

**Usage**

```r
forwardcommodity()
```

**Details**
The user inputs are as follows:
- Spot: entered in decimals. For e.g. 105.50
- Risk free Rate: entered in decimals. For e.g. 5 per cent is entered as 0.05
- Maturity: entered in number of years. For e.g. half year is 0.5
- Convenience yield: entered in decimals. e.g. enter 0.02 for 2 per cent.
- Storage cost(s): entered with comma separation if it is in cash and occurring at multiple times e.g. 2.50, 3.0. If it is in yield terms, it is entered in decimals. e.g. enter 0.02 for 2 per cent.
- Storage time(s): entered with comma separation e.g. 0.25, 0.50 for 3 months and 6 months.
- Type of Income: chosen between yield/cash.

**Value**
The forward value of a commodity.

**Author(s)**
S Subramanian <ssubramanian@sssihl.edu.in>

**References**
See Also

forwardcurrency, forwardstock

forwardcurrency Calculate the forward value of a currency.

Description

Function to calculate the forward value of a currency.

Usage

forwardcurrency()

Details

The user inputs are as follows:
Spot: entered in decimals. For e.g. 105.50
Risk free Rate: entered in decimals. For e.g. 5 per cent is entered as 0.05
Maturity: entered in number of years. For e.g. half year is 0.5
Foreign Interest(s): entered with comma separation if it is in cash and occurring at multiple times
e.g. 2.50, 3.0. If it is in yield terms, it is entered in decimals. e.g. 0.02 for 2 per cent
Interest time(s): entered with comma separation e.g. 0.25, 0.50 for 3 months and 6 months
Type of Income: chosen between yield/cash

Value

The forward value of a currency.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

forwardstock, forwardcommodity
forwardstock  

**Calculate the forward value of a stock.**

**Description**

Function to calculate the forward value of a stock.

**Usage**

```r
forwardstock()
```

**Details**

The user inputs are as follows:
- **Spot**: entered in decimals. For e.g. 105.50
- **Risk free Rate**: entered in decimals. For e.g. 5 per cent is entered as 0.05
- **Maturity**: entered in number of years. For e.g. half year is 0.5
- **Dividend(s)**: entered with comma separation if it is in cash and occurring at multiple times e.g. 2.50, 3.0. If it is in yield terms, it is entered in decimals. e.g. 0.02 for 2 per cent
- **Dividend time(s)**: entered with comma separation e.g. 0.25, 0.50 for dividends in 3 months and 6 months
- **Type of Income**: chosen between yield/cash

**Value**

The forward value of a stock.

**Author(s)**

S Subramanian <ssubramanian@sssihl.edu.in>

**References**


**See Also**

forwardcurrency, forwardcommodity
fra Calculate the forward rate.

Description

Function to Calculate the forward rate.

Usage

fra()

Details

The user inputs are as follows:
Months1: number of months for the loan period to begin- enter 3 for 3 months
Rate1: enter in decimals. For e.g. 5 Months2: number of months for the loan period to end- enter 6 for 6 months
Rate2: enter in decimals. For e.g. 8 Frequency of spot rates: chosen between Continuous and Loan period

Value

The forward rate of interest.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

forwardcurrency,forwardcommodity
**fravelue**  
*Calculate the value of a forward rate agreement.*

**Description**  
Function to Calculate value of a forward rate agreement.

**Usage**  
fravelue()

**Details**  
The user inputs are as follows:  
Notional: enter notional value of FRA. e.g. 1 mn is entered as 1000000  
Fixed Rate: enter in decimals. For e.g. 5 Fwd Rate: enter in decimals. For e.g. 8 Months1: number of months for the loan period to begin- enter 3 for 3 months  
Months2: number of months for the loan period to end- enter 6 for 6 months

**Value**  
The value of a forward rate agreement.

**Author(s)**  
S Subramanian <ssubramanian@sssihl.edu.in>

**References**  

**See Also**  
fra

---

**futurescommodity**  
*Calculate the value of a commodity futures.*

**Description**  
Function to calculate the value of a commodity futures.

**Usage**  
futurescommodity()
Details

The user inputs are as follows:
- Spot: entered in decimals. For e.g. 105.50
- Risk free Rate: entered in decimals. For e.g. 5 per cent is entered as 0.05
- Maturity: entered in number of years. For e.g. half year is 0.5
- Convenience yield: entered in decimals. e.g. 0.02 for 2 per cent
- Storage cost(s): entered with comma separation if it is in cash and occurring at multiple times e.g. 2.50, 3.0. If it is in yield terms, it is entered in decimals. e.g. 0.02 for 2 per cent
- Storage time(s): entered with comma separation e.g. 0.25, 0.50 for 3 months and 6 months
- Type of Income: chosen between yield/cash

Value

The value of a commodity futures.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

futurescurrency, futuresstock

Description

Function to calculate the value of a currency futures.

Usage

futurescurrency()

Details

The user inputs are as follows:
- Spot: entered in decimals. For e.g. 105.50
- Risk free Rate: entered in decimals. For e.g. 5 per cent is entered as 0.05
- Maturity: entered in number of years. For e.g. half year is 0.5
- Foreign Interest(s): entered with comma separation if it is in cash and occurring at multiple times e.g. 2.50, 3.0. If it is in yield terms, it is entered in decimals. e.g. 0.02 for 2 per cent
Value

The value of a currency futures.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

futuresstock, futurescommodity

---

`futuresstock`  
*Calculate the value of a stock futures.*

Description

Function to calculate the value of a stock futures.

Usage

`futuresstock()`

Details

The user inputs are as follows:

- **Spot**: entered in decimals. For e.g. 105.50
- **Risk free Rate**: entered in decimals. For e.g. 5 per cent is entered as 0.05
- **Maturity**: entered in number of years. For e.g. half year is 0.5
- **Dividend(s)**: entered with comma separation if it is in cash and occurring at multiple times e.g. 2.50, 3.0. If it is in yield terms, it is entered in decimals. e.g. 0.02 for 2 per cent
- **Dividend time(s)**: entered with comma separation e.g. 0.25,0.50 for dividends in 3 months and 6 months
- **Type of Income**: chosen between yield/cash

Value

The value of a stock futures.
**fv**

*Calculate the future value of an amount.*

**Description**

Function to calculate the future value of an amount.

**Usage**

```r
fv()
```

**Details**

The user inputs are as follows:
- Present Value: entered in decimals. For e.g. 105.50
- Rate: entered in decimals. For e.g. 5 per cent is entered as 0.05
- Time: entered in number of years. For e.g. half year is 0.5
- Compounding frequency: chosen amongst continuous/Quarterly/Semi-annual/Annual

**Value**

The future value of an amount.
fvann

Calculate the future value of an annuity.

Description

Function to calculate the future value of an annuity.

Usage

fvann()

Details

The user inputs are as follows:
Installment: entered in decimals. For e.g. 105.50
Rate: entered in decimals. For e.g. 5 per cent is entered as 0.05
Time: entered in number of years. For e.g. half year is 0.5
Payment frequency: chosen amongst Monthly/Quarterly/Semi-annual/Annual

Value

The future value of an annuity.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

pvann, fv

GBMPPaths

Simulate and plot Geometric Brownian Motion path(s)

Description

Function to simulate and plot Geometric Brownian Motion path(s)

Usage

GBMPPaths()
Details
The user inputs are as follows:
- Drift (or mu)
- Volatility (or sigma)
- Paths
Clicking on the '+' and '-' respectively increases and decreases the values of each of the above three inputs.

Value
A plot of Geometric Brownian Motion path(s) showing the Drift rate (mu) and the Volatility (sigma).

Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also
ABMPaths, BrownianPaths

greekneutrality

Description
Function to calculate the hedge positions for achieving greek(s) neutrality for European Call/Put.

Usage
greekneutrality()

Details
The user inputs are as follows:
- Positions: entered with comma separation in case of multiple options. Short positions are entered with a '-' sign prefixed. e.g. -1000, -500, -2000, -500
- Deltas: entered with comma separation in case of multiple options. e.g. 0.5, 0.8, -0.4, 0.7
- Gammas: entered with comma separation in case of multiple options. e.g. 2.2, 0.6, 1.3, 1.8
- Vegas: entered with comma separation in case of multiple options. e.g. 1.8, 0.2, 0.7, 1.4
- Type of Neutrality desired: chosen among Delta, Delta and Gamma, Delta and Vega, Delta Gamma and Vega
- Delta, Gamma, Vega of traded option 1: entered with comma separation in case of multiple options.
e.g. 0.6, 1.5, 0.8
Delta, Gamma, Vega of traded option 2: entered with comma separation in case of multiple options.
e.g. 0.1, 0.5, 0.6

Value
Positions in the underlying or traded option(s) to achieve the desired greek neutrality

Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also
calcgreeks

GUIDE
The main menu for the GUIDE package.

Description
Function to bring up the main menu for the GUIDE package

Usage
GUIDE()

Details
Entering "GUIDE()" brings up a GUI containing the following menus:
Forwards
Futures
Options
Swaps
Stochastic Processes
Value at Risk
Bonds and
Utilities

Value
The main menu for the GUIDE package
Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


impvol

Calculate the Black scholes implied volatility of a European Call/Put.

Description

Function to calculate the Black scholes implied volatility of a European Call/Put.

Usage

impvol()

Details

The user inputs are as follows:

- Exercise style: chosen between European/American
- Spot: to be entered in numbers for e.g. 120.50
- Strike: to be entered in numbers for e.g. 110.50
- Risk free rate per annum: to be entered in decimals. For e.g. 0.05 for 5 per cent
- Maturity in number of years: to be entered in decimals. For e.g. 0.25 for a quarter year
- Dividend yield: to be entered in decimals. For e.g. 0.02 for 2 per cent
- Mkt price: to be entered in numbers for e.g. 12.50
- Type of Option: chosen between Call/Put

Value

The Black scholes implied volatility of a European Call/Put.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

blackscholes
**irswapvalue**

*Calculate the value of an interest rate swap.*

**Description**

Function to calculate the value of an interest rate swap.

**Usage**

`irswapvalue()`

**Details**

The user inputs are as follows:
- Notional: to be entered in decimals for e.g. 1000000
- Fixed rate: entered in decimals for e.g. 0.05 for 5 per cent
- Last spot rate: entered in decimals for e.g. 0.05 for 5 per cent
- Months for first payment: enter 3 for 3 months
- Spot rates: enter with comma separation. e.g. 0.054, 0.056, 0.058
- Frequency of spot rates: chosen amongst continuous/quarterly/semi-annual/annual
- Settlement frequency: chosen amongst quarterly/semi-annual/annual

**Value**

The value of an interest rate swap.

**Author(s)**

S Subramanian <ssubramanian@sssihl.edu.in>

**References**


**See Also**

curswapvalue, cdswap
JDPaths

**Simulate and plot Jump Diffusion path(s)**

**Description**

Function to simulate and plot Jump Diffusion path(s)

**Usage**

`JDPaths()`

**Details**

The user inputs are as follows:
- Drift (or mu)
- Volatility (or sigma)
- Mean of jumps
- Std Dev of Jumps
- Jump Intensity
- Paths

Clicking on the `+` and `-` respectively increases and decreases the values of each of the above inputs.

**Value**

A graph of Jump Diffusion path(s) showing the parameter values.

**Author(s)**

S Subramanian <ssubramanian@sssihl.edu.in>

**References**


**See Also**

`GBMPaths`, `ABMPaths`
Premium3D  

**Option premium as a function of stock price/strike and time.**

**Description**

Function to plot the option premium as a function of stock price/strike and time

**Usage**

`Premium3D()`

**Details**

The user inputs are as follows:
- Type of Option: chosen between Call/Put
- X-Y axis: chosen between Stock price-Time/Strike - Time
- sigma
- Risk free rate
- Clicking on the `'+/-'` respectively increases/decreases the values.

**Value**

A plot of the option premium as a function of stock price/strike and time

**Author(s)**

S Subramanian <ssubramanian@sssihl.edu.in>

**References**


**See Also**

- `basicpayoffs`

pricematurity  

**Plot the relationship between price and maturity of a bond.**

**Description**

Function to Plot the relationship between price and maturity of a bond.

**Usage**

`pricematurity()`
Details

The user inputs are as follows:
- Coupon rate (per cent p.a.)
- Discount rate (or yield) p.a.
Moving the slider increases/decreases the values of the above two inputs.
Coupon frequency: chosen amongst quarterly, semi-annual and annual.

Value

A Plot of the relationship between price and maturity of a bond.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

priceyield, bondprice

priceyield

Plot the relationship between price and yield of a bond.

Description

Function to Plot the relationship between price and yield of a bond.

Usage

priceyield()

Details

The user inputs are as follows:
- Coupon rate (per cent p.a.)
- Maturity (yrs)
Moving the slider increases/decreases the values of the above two inputs.
Coupon frequency: chosen amongst quarterly, semi-annual and annual.

Value

A Plot of the relationship between price and yield of a bond.
**Description**

Function to calculate the Present value of an amount.

**Usage**

`pv()`

**Details**

The user inputs are as follows:
- Future Value: entered in decimals. For e.g. 105.50
- Rate: entered in decimals. For e.g. 5\% per cent is entered as 0.05
- Time: entered in number of years. For e.g. half year is 0.5
- Compounding frequency: chosen amongst continuous/Quarterly/Semi-annual/Annual

**Value**

The Present value of an amount.

**Author(s)**

S Subramanian <ssubramanian@sssihl.edu.in>

**References**


**See Also**

`pricematurity, bondprice`

---

```

pv               Calculate the Present value of an amount.

```
**pval**

*Calculate the cumulative probability corresponding to a given a z value from a normal distribution.*

**Description**

Function to calculate the cumulative probability corresponding to a given a z value from a normal distribution.

**Usage**

```r
pval()
```

**Details**

The user input is as follows:

- `z value`: A number that can be from - infinity to + infinity. E.g. `-1.65`

**Value**

The cumulative probability from the left tail of the distribution till the given z value.

**Author(s)**

S Subramanian <ssubramanian@sssihl.edu.in>

**References**


**See Also**

- `zval`

---

**pvann**

*Calculate the Present value of an annuity.*

**Description**

Function to calculate the Present value of an annuity.

**Usage**

```r
pvann()
```
Function to calculate rate in the desired frequency.

rate

Calculate rate in the desired frequency.

Details

The user inputs are as follows:
- Given frequency: chosen amongst continuous/Quarterly/Semi-annual/Annual
- Required frequency: chosen amongst continuous/Quarterly/Semi-annual/Annual
- Given rate: entered in decimals. For e.g. 5 per cent is entered as 0.05
- Payment frequency: chosen amongst Monthly/Quarterly/Semi-annual/Annual

Value

Rate expressed the desired frequency.

Author(s)

S Subramanian <ssubramanian@ssihl.edu.in>

References


See Also

pv, fvann
Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also
pv, fv

ratetreegui
Plot a interest rate tree

Description
Function to plot a interest rate tree

Usage
ratetreegui()

Details
The user inputs are as follows:
Rate: to be entered in percent. For e.g. enter 5.0 for 5 percent
u: up move factor- to be entered in decimals. For e.g. 1.25
d: down move factor- to be entered in decimals. For e.g. 0.80
q: probability of up move- to be entered in decimals. For e.g. 0.60
Rate tree steps: Clicking on the `+` and `-` respectively increases and decreases the value.

Value
A plot of interest rate tree with user specified parameters.

Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also
bondtreegui
reversebutterfly

Description
Function to plot Profit & Loss of reverse butterfly.

Usage
reversebutterfly()

Details
Short call 1 check box: checking it plots the Profit and loss of a Short call position.
Short call 2 check box: checking it plots the Profit and loss of a Short call position.
Long two calls check box: checking it plots the Profit and loss of 2 long calls position.
Profit check box: checking it plots the over all Profit and loss of a reverse butterfly.

Value
Profit & Loss plot of reverse butterfly.

Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also
butterfly, trading.menu

reversestraddle

Description
Function to plot Profit & Loss of reverse straddle.

Usage
reversestraddle()
reversestrangle

Description

Function to plot Profit & Loss of reversestrangle.

Usage

reversestrangle()

Details

Long Put check box: checking it plots the Profit and loss of a long put position.
Long Call check box: checking it plots the Profit and loss of a long call position.
Profit check box: checking it plots the over all Profit and loss of a reverse straddle.

Value

Profit & Loss plot of reversestraddle.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

straddle, trading.menu
See Also

strangle, trading.menu

---

**stockoptiontreegui**  
*Plot a stock option Tree*

Description

Function to plot a Binomial stock Tree

Usage

stockoptiontreegui()

Details

The user inputs are as follows:
- **Type of Option**: chosen between Call/Put
- **Exercise style**: chosen between European/American
- **Stock Price**: to be entered in numbers for e.g. 120.50
- **Strike price**: to be entered in numbers for e.g. 110.50
- **Time in number of years**: to be entered in decimals. For e.g. 0.25 for a quarter year
- **Volatility (or sigma) per annum**: to be entered in decimals. For e.g. 0.25 for 25 percent
- **Risk free rate per annum**: to be entered in percent. For e.g. enter 5.0 for 5 percent
- **u**: up move factor- to be entered in decimals. For e.g. 1.25
- **d**: down move factor- to be entered in decimals. For e.g. 0.80
- **q**: probability of up move- to be entered in decimals. For e.g. 0.60
- **Dividend yield**: to be entered in decimals. For e.g. 0.02 for 2 percent
- **No of steps**: Clicking on the ‘+’ and ‘-’ respectively increases and decreases the value.
- **Plot type**: chosen between Stock tree / option tree

Value

A plot of Stock Tree / Option Tree with user specified parameters.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

blackscholes
stockTimeGreeks

Plot of option greeks for a European Call/Put as a function of stock price and time.

Description

Function to plot of option greeks for a European Call/Put as a function of stock price and time.

Usage

stockTimeGreeks()

Details

The user inputs are as follows:
Type of Option: chosen between Call/Put
Greek: chosen amongst Delta, Gamma, Vega, Theta, Rho
Sigma (Volatility) per annum
Risk free rate per annum:
Clicking "+ / -" increases/decreases the value of the above two inputs.

Value

Plot of option greeks for a European Call/Put as a function of stock price and time.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

calgreeks
straddle

Description
Function to plot Profit & Loss of straddle.

Usage
straddle()

Details
Long Put check box: checking it plots the Profit and loss of a long put position.
Long Call check box: checking it plots the Profit and loss of a long call position.
Profit check box: checking it plots the over all Profit and loss of a straddle.

Value
Profit & Loss plot of straddle.

Author(s)
S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also
reversestraddle, trading.menu

strangle

Description
Function to plot Profit & Loss of strangle.

Usage
strangle()
Details

Long Put check box: checking it plots the Profit and loss of a long put position.
Long Call check box: checking it plots the Profit and loss of a long call position.
Profit check box: checking it plots the over all Profit and loss of a strangle.

Value

Profit & Loss plot of strangle.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

reversestrangle, trading.menu

Description

Function to plot Profit & Loss of strap.

Usage

strap()

Details

Two Long Calls check box: checking it plots the Profit and loss of a long put position.
Long Put check box: checking it plots the Profit and loss of a long call position.
Profit check box: checking it plots the over all Profit and loss of a strap.

Value

Profit & Loss plot of strap.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References

See Also

strip, trading.menu

---

**strip**

*Profit & Loss plot of strip.*

**Description**

Function to plot Profit & Loss of strip.

**Usage**

`strip()`

**Details**

Two Long Puts check box: checking it plots the Profit and loss of a long put position.
Long Call check box: checking it plots the Profit and loss of a long call position.
Profit check box: checking it plots the over all Profit and loss of a strip.

**Value**

Profit & Loss plot of strip.

**Author(s)**

S Subramanian <ssubramanian@sssihl.edu.in>

**References**


**See Also**

strap, trading.menu
swaptiontreegui  Plot a Swaption Tree

Description

Function to plot a Swaption Tree

Usage

swaptiontreegui()

Details

The user inputs are as follows:
Face Value: to be entered in numbers for e.g. 120.50
Strike price: to be entered in numbers for e.g. 110.50
Rate per annum: to be entered in percent. For e.g. enter 5.0 for 5 percent
u: up move factor- to be entered in decimals. For e.g. 1.25
d: down move factor- to be entered in decimals. For e.g. 0.80
q: probability of up move- to be entered in decimals. For e.g. 0.60
Swap Maturity: Clicking on the '+' and '-' respectively increases and decreases the value.
Option Maturity: must be lesser than Swap Maturity. Clicking on the '+' and '-' respectively increases and decreases the value.
Plot type: chosen between Swaption tree / Swap tree

Value

A plot of Swaption Tree with user specified parameters.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

bondoptiontreegui, swaptreegui
Description

Function to plot a Swap Tree

Usage

swaptreegui()

Details

The user inputs are as follows:
Face Value: to be entered in numbers for e.g. 120.50
Rate per annum: to be entered in percent. For e.g. enter 5.0 for 5 percent
u: up move factor- to be entered in decimals. For e.g. 1.25
d: down move factor- to be entered in decimals. For e.g. 0.80
q: probability of up move- to be entered in decimals. For e.g. 0.60
Fixed Rate: to be entered in percent. For e.g. 4.5 for 4.5 percent
Swap Maturity: Clicking on the ‘+’ and ‘-’ respectively increases and decreases the value.
Plot type: chosen between Swap tree / Rate tree

Value

A plot of Swap Tree with user specified parameters.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

ratetreegui, swaptiontreegui
trading.menu

A menu for Option trading strategies.

Description

Function to bring up the menu for option trading strategies.

Usage

trading.menu()

Details

Brings up a menu of option trading strategies to choose from. Strategies include:
- Bull spread
- Bear spread
- Butterfly
- Reverse butterfly
- Straddle
- Reverse straddle
- Strangle
- Reverse Strangle
- Strip
- Strap

Making a choice plots the chosen trading strategy.

Value

A menu of various Option trading strategies.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

basicpayoffs
**Description**

Function to calculate the value at risk of a single stock.

**Usage**

```r
var1stock()
```

**Details**

The user inputs are as follows:
- Value of the stock: to be entered in numbers for e.g. 110.50
- mu: the expected return- to be entered in decimals. For e.g. 0.05 for 5 per cent
- Sigma (or Volatility) per annum: to be entered in decimals. For e.g. 0.25 for 25 per cent
- Confidence level: to be entered in decimals. For e.g. 0.95 for 95 per cent
- Horizon (in months): For e.g. enter 12 for a year
- Distribution: chosen between normal/lognormal

**Value**

The dollar value at risk of a single stock.

**Author(s)**

S Subramanian <ssubramanian@ssihl.edu.in>

**References**


**See Also**

`var2stocks`
var2stocks  

*Calculate the value at risk of two stocks.*

**Description**

Function to calculate the value at risk of two stocks.

**Usage**

`var2stocks()`

**Details**

The user inputs are as follows:
- Value of the first stock: to be entered in numbers for e.g. 110.50
- Value of the second stock: to be entered in numbers for e.g. 170.50
- mu1: the expected return- to be entered in decimals. For e.g. 0.05 for 5 per cent
- mu2: the expected return- to be entered in decimals. For e.g. 0.06 for 6 per cent
- Sigma1 (or Volatility) per annum: to be entered in decimals. For e.g. 0.25 for 25 per cent
- Sigma2 (or Volatility) per annum: to be entered in decimals. For e.g. 0.3 for 30 per cent
- Confidence level: to be entered in decimals. For e.g. 0.95 for 95 per cent
- Correlation: a number between -1 and +1 to be entered in decimals. For e.g. 0.6
- Horizon (in months): For e.g. enter 12 for a year
- Distribution: chosen between normal/lognormal

**Value**

The dollar value at risk of two stocks.

**Author(s)**

S Subramanian <ssubramanian@sssihl.edu.in>

**References**


**See Also**

`var1stock`
Description

Function to plot the behavior of value at risk as a function of its determinants.

Usage

varbehavior()

Details

The user inputs are as follows:
weight1: The weight of stock 1
mu1: the expected return
Sigma1 (or Volatility) per annum:
mu2: the expected return
Sigma2 (or Volatility) per annum:
Clicking on "+/-" increases/decreases the values of each of the above parameters.

Value

A graph of the behavior of value at risk as a function of its determinants.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

var1stock, var2stocks
zval

*Calculate the cumulative probability corresponding to a given a z value from a normal distribution.*

---

**Description**

Function to calculate the cumulative probability corresponding to a given a z value from a normal distribution.

**Usage**

```r
zval()
```

**Details**

The user input is as follows:

- **z value**: A number that can be from - infinity to + infinity. E.g. -1.65

**Value**

The cumulative probability from the left tail of the distribution till the given z value.

**Author(s)**

S Subramanian <ssubramanian@sssihl.edu.in>

**References**


**See Also**

- `pval`
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