Package ‘GUIDE’

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**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@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@sssihl.edu.in>

References

See Also
going_in
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`

---

**bondconv**

*Calculate the convexity of a bond.*

**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 <ssubraman@sssihl.edu.in>

**References**


**See Also**

`bonddur,bondprice`
bonddur  

**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@sssihl.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
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
bondoptiontreegui

Plot a Bond Option Tree

Description
Function to plot a Bond Option Tree

Usage
bondoptiontreegui()

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@sssihl.edu.in>

References

See Also
bondtreegui
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@ssihl.edu.in>

References


See Also

bondchange, bonddur
bondtreegui  

*Plot a Bond Tree*

**Description**

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`
BrownianMotion

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@sssihl.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()`
curswapvalue

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
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>
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

forwardstock Calculate the forward value of a stock.

Description

Function to calculate the forward value of a stock.

Usage

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@ssihl.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
fravalue

Calculate the value of a forward rate agreement.

Description

Function to calculate the value of a forward rate agreement.

Usage

fravalue()

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

futurescurrency Calculate the value of a currency futures.

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
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 value of a currency futures.

**Author(s)**

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

References

See Also
futurescurrency, futurescommodity

---

fv Calculate the future value of an amount.

Description
Function to calculate the future value of an amount.

Usage
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.

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

References

See Also
fvann, pv
fvann

Calculates 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

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

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
impvol

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

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
- 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`

---

**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.
pv

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

References

See Also
pricematurity, bondprice

---

pv  
Calculate the Present value of an amount.

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
pvann, fv
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**

`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 <sssubramanian@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**

`pvann()`
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 Present value of an annuity.

Author(s)

S Subramanian <ssubramanian@sssihl.edu.in>

References


See Also

pv, fvann

rate Calculate rate in the desired frequency.

Description

Function to calculate rate in the desired frequency.

Usage

rate()

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

Value

Rate expressed the desired frequency.
ratetreegui

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

table,butterfly,trading.menu

reversestraddle

Description

Function to plot Profit & Loss of reverse straddle.

Usage

reversestraddle()
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

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 strangle.

Value

Profit & Loss plot of reversestraddle.

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

References
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

calcgreeks
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

strip

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
swaptreegui

Plot a swap Tree

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
Calculate the value at risk of a single stock.

Description

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

Usage

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@sssihl.edu.in>

References


See Also

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
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
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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