Package 'iClick'

February 13, 2026

Type Package

Title A Button-Based GUI for Financial and Economic Data Analysis

Version 1.6.1

Date 2026-02-13

Author Ho Tsung-wu [aut, cre]

Maintainer Ho Tsung-wu <tsungwu@ntnu.edu.tw>

Description A GUI designed to support the analysis of financial-economic time series data.

License GPL (>= 2)

LazyData TRUE

LazyLoad yes

Depends R (>= 2.10),fPortfolio,tcltk,lattice,xts

Imports boot, car, coefplot, fBasics, forecast, grid, JFE, FRAPO, lmtest, lubridate, methods, openair, papeR, quantmod, rugarch, sandwich, timeDate, timeSeries, zoo

NeedsCompilation no

Repository CRAN

Date/Publication 2026-02-13 05:10:02 UTC

Contents

iClick-package   *A Button-based GUI for Financial and Economic Data Analysis*

Description

A Output GUI designed to simplfy the use of R packages and functions by clicking.

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

Maintainer: Ho Tsung-wu <tsungwu@ntnu.edu.tw>

boxPlotX   *Box-Whisker plot.*

Description

This function generates plot by iClick.VisOneReturns.

Usage

```
boxPlotX(X, col = "indianred2", title = TRUE)
```

Arguments

X	A timeSeries object, single time series returns.
col	String for color.
title	Whether to generate title of graph.

Details

This function is an internal function of iClick GUI, which is executed on iClick.VisOneReturns GUI.

Value

Plot a graph

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

See Also

Functions in fBasics.

---

calendar.heat   *Calendar Heapmap Plot*

Description

This function generates calendar heatmap plot up to six year, due to visibility.

Usage

```
calendar.heat(data, ncolors = 99, color = "r2b", date.form = "%Y-%m-%d", main = NULL)
```

Arguments

data	Daily data of price or others.
ncolors	Number of color for heatmap.
color	Color plate selected, selection includes c("r2b","r2g","w2b").
date.form	Default date form.
main	main label of graph.

Details

This function is within the iClick GUI, is executed within iClick.VisAssetPrice().

Value

Plot

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

---

cumulatedPlotX   *Cumulative returns plot.*

Description

This function generates plot by iClick.VisOneReturns().

Usage

```
cumulatedPlotX(x, index = 100, labels = TRUE, type = "l",
col = "indianred2", ylab = "Values", title = TRUE,
grid = TRUE, box = TRUE, rug = TRUE)
```

Arguments

x	A timeSeries object, single time series returns.
index	Returns index.
labels	Whether to generate label for the graph.
type	Type of graph.
col	Options for color.
ylab	String label for Y axis.
title	Whether to generate title for the graph.
grid	Whether to use grid in plot.
box	Whether to put the plot into a box.
rug	Whether to add rug.

Details

This function is an internal function of iClick GUI, which is executed on iClick.VisOneReturns GUI.

Value

Plot

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

---

cutAndStack   *Cut and Stack Plotting Function*

Description

This function calls cut() to cut tiimeseries into several equal periods and plots over time.

Usage

```
cutAndStack(x, number, overlap = 0.1, type = c("l","g"), xlab = "Time",
ylab = deparse(substitute(x)))
```

Arguments

x	A timeSeries object, single time series price.
number	Number of equal cut.
overlap	Percentage of overlapping across cuts.
type	Type of line.
xlab	Label of X axis.
ylab	Label of Y axis.

Details

This function is within the iClick GUI, is executed within iClick.VisAssetprice().

Value

Plot

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

---

data-sets   *Data Sets*

Description

assetReturns contains DJ component stocks returns data. world20 contains index returns of 20 countries.

Usage

```
data(assetReturns)
data(world20)
```

Value

assetReturns is a time series object of package xts. world20 is index returns time series data.

---

drawdownPlotX   *Drawup Returns Plots*

Description

This function is within the iClick GUI, is executed within iClick.VisOneReturns(dat), the data frame dat has two columns, the first column is date index and the second one is numeric time series data.

Usage

```
drawdownPlotX(x, labels = TRUE, type = "l", col = "darkgreen",
title = TRUE, ylab = "Down returns", grid = TRUE, box = TRUE,
rug = TRUE)
```

Arguments

x	A timeSeries object, single time series returns.
labels	Whether to generate label for the graph.
type	Type of line.
col	Options for color.
title	Whether to generate title for the graph.
ylab	String for Y axis.
grid	Whether to use grid in plot.
box	Whether to put the plot into a box.
rug	Whether to add rug.

Details

This function is an internal function of iClick GUI, which is executed on iClick.VisOneReturns GUI.

Value

Plot

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

See Also

Functions in fBasics.

---

drawupPlotX   *Drawup Returns Plots*

Description

This function is within the iClick GUI, is executed within iClick.VisOneReturns(dat), the data frame dat has two columns, the first column is date index and the second one is numeric time series data.

Usage

```
drawupPlotX(x, labels = TRUE, type = "l", col = "indianred2",
title = TRUE, ylab = "Up Returns", grid = TRUE, box = TRUE,
rug = TRUE)
```

Arguments

x	A timeSeries object, single time series returns.
labels	Whether to generate label for the graph.
type	Type of line.
col	Options for color.
title	Whether to generate title for the graph.
ylab	String for Y axis.
grid	Whether to use grid in plot.
box	Whether to put the plot into a box.
rug	Whether to add rug.

Details

This function is an internal function of iClick GUI, which is executed on iClick.VisOneReturns GUI.

Value

Plot

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

See Also

Functions in fBasic and fAssets.

---

drawups *Calculate Drawup Returns for Drawup Plot*

Description

This function calculates drawup returns for plotting.

Usage

```
drawups(x)
```

Arguments

x   A timeSeries object, single time series returns.

Details

This function is an internal function for drawplot of iClick GUI, which is executed on iClick.VisOneReturns GUI.

Value

Returns of draw up periods.

Author(s)

Ho Tsung-wu <tsungwu@mail.shu.edu.tw>

---

getTWSE.fiveSecond   *Download Download 5-second index price from the Taiwan Stock Exchange*

Description

It downloads Download 5-second financial index from the Taiwan Stock Exchange.

Usage

```
getTWSE.fiveSecond(ymd=NULL,skip=2,index.names=NULL)
```

Arguments

ymd   The year-month-day format of data retrived, for example, "2022-05-03". If un-
                specified, the default is the Sys.date(); if Saturday, it moves back to Friday; if
                Sunday, it moves to Monday.

skip   The rows to skip, since the web usually contains empty space or notes in the
                beginning, currently, skip 2 lines is OK, however, it skipped 1. Therefore, the
                parameter can be checked if it changes again.

index.names   The colnames (names of index price) of the dataset are originally in Chinese
                characters, to avoid language problem, we changed it to V1~V34. Users may
                offer your own colnames here.

Details

This function connects with <"https://www.twse.com.tw/exchangeReport/MI_5MINS_INDEX">
and downloads the specified market data. The rownames of downloaded data embeds the times-
tamp already.

Value

data   The data retrieved.

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal Univer-
sity.

Examples

```
#getTWSE.fiveSecond(ymd="2022-05-03",skip=2,index.names=NULL)$data
```

---

iClick.ARIMA   *iClick GUI for ARIMA*

Description

This GUI estimates ARIMA both with automatic lag selection and fixed lag length. The GUI is only only a GUI, but also a output format.

Usage

```
iClick.ARIMA(dat, AR = 1, MA = 1, n.ahead = 24, ic = "aic")
```

Arguments

dat	Time series object, xts.
AR	Pre-specified fixed AR order.
MA	Pre-specified fixed MA order.
n.ahead	Periods of out-of-sample forecast.
ic	Information criteria for lag selection,ic=c("aicc", "aic", "bic"). See auto.arima() of package forecast.

Details

This GUI fits two ARMA, fixed orders and automatically fitted orders, and returns a two-part GUI with output on it. The outputs can be saved as .RData file for later use, the last row is the save button.

The saved filename is automatically generated by selections and results; for example, .aicOrder-ARIMA_102.RData represents the automatically fits ARIMA(p,d,q) orders are ARIMA(1,0,2) by AIC.

Using load(".aicOrderARIMA_102.RData") to retrieve the file and ls() to list objects, and use names() to show details of objects.

The input returns data must be in percentage form; namely, dlog()*100

Value

Fitted ARMA regression output.

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

See Also

arima() and auto.arima() of package forecast.

Examples

```
## Simulation data
dat=rnorm(200)
y=ts(dat, end = c(2025, 8), frequency = 12)

iClick.ARIMA(y)
```

---

iClick.GARCH   *iClick Output GUI for Univariate GARCH Models*

Description

This GUI makes GARCH estimation of comparison easy. With a pre-selected GARCH type, it automatically fits eight probability distributions and conducts all diagnostic tests with a Click.

Usage

```
iClick.GARCH(dat, meanEQ = meanEQ, garchEQ = garchEQ, n.ahead = 15)
```

Arguments

dat	Time series object, xts.
meanEQ	Specification of mean equation.
garchEQ	Specification of variance equation.
n.ahead	Number of out-of-sample forecasting period.

Details

This GUI fits 8 distributions for univariate GARCH with pre-selected GARCH types, and returns a 54-button GUI output. The outputs can be individually saved as .RData file for later use, the last row is the save button.The saved filename is automatically generated once clicked, in addition, corresponding .csv files will be generated also.

The 54-button GUI is divided into 9 panes, and the last pane collects coefficient outputs and diagnostic tests together, which aims to make estimation comparison easy.

Value

Fitted GARCH regression output.

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

See Also

library(rugarch)

Examples

```
##==External data
data("world20")
y=na.omit(diff(log(world20[,1])))

##== Simulation data
#dat=rnorm(200,5,1)
#y=ts(dat, start = c(1970, 1), frequency = 12)

meanEQ=list(AR=1,MA=0,Exo=NULL, autoFitArma=FALSE,arfimaDiff=FALSE,archM=FALSE)
  # If there are external regressors X, put them as Exo=X
  # autoFitArma=TRUE, If you want to fit arma automatically.
  # arfimaDiff=TRUE,to take ARFIMA difference
  # archM=TRUE, to estimate GARCH-in-mean

garchEQ=list(Type="sGARCH",P=1,Q=1, exo=NULL)
  # Type: "sGARCH","eGARCH","gjrGARCH","iGARCH","apGARCH"
  # please check rugarch for details.
  # P is the ARCH order
  # Q is the GARCH order

#iClick.GARCH(y,meanEQ, garchEQ,  n.ahead=15)
# This computation takes more than 6 seconds, hence I added a # to block it.
```

---

iClick.lm   *iClick GUI for linear model*

Description

This GUI estimates ARIMA both with automatic lag selection and fixed lag length. The GUI is only only a GUI, but also a output format.

Usage

iClick.lm(dep,indep,data,Formula=NULL,bootrep=99)

Arguments

data	A R data object for lm()
dep	scalar, the number of column as dependent variable
indep	scalar, the numbers of column as independent variables
Formula	A formula for lm, default is NULL, if specified, dep and indep should leave empty. See example below
bootrep	Bootstrap replications, default is 99

Details

This GUI fits equaiton into lm regression.

Value

Fitted lm regression output.

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

See Also

lm()

Examples

```
data("FFplusMOM")
iClick.lm(dep=2,indep=c(3,5:6),data=FFplusMOM, bootrep=9)

#Eq=RET~(MK_BETA+HML_BETA+SMB_BETA)^2
#iClick.lm(Formula=Eq,data=FFplusMOM, bootrep=9)
```

---

iClick.VisAssetPrice   *Visualize Daily Asset Price*

Description

This GUI conducts plots of daily asset price, including calendar heatmap and many plots which are not easy to use for new users.

Usage

```
iClick.VisAssetPrice(dat, color4 = "r2b", color5 = "jet")
```

Arguments

dat	Time series object,xts.
color4	Color choice for annual calendar heatmap, the default is "r2b".
color5	Color choice for 6-year calendar heatmap, the default is "jet".

Details

This GUI is designed for financial time series, maily daily stock price. Other time series data works also, as long as it has a date column. We call function calendarPlot() from package "openair", and modified the function calendarHeat() to fit daily price, which is limited to 11 years.

Value

Output GUI

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

Examples

```
#data("IBM")
#assetPrice=IBM[,1]
#iClick.VisAssetPrice(assetPrice)
```

---

iClick.VisOneReturns   *Visualize Asset Returns*

Description

This GUI conducts plots of daily asset returns, including ACF, PACF, drawdowns, and Talyor effects.

Usage

```
iClick.VisOneReturns(dat)
```

Arguments

dat   Time series object,xts.

Details

This GUI is designed for financial time series, maily daily stock returns. Other time series data works also, as long as it has a date column.

Value

Output GUI

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

Examples

```
data("world20")
y=na.omit(diff(log(world20[,1])))

## Simulation data
#dat=rnorm(200,5,1)
#y=ts(dat, start = c(1970, 1), frequency = 12)
iClick.VisOneReturns(y)
```

JFE   *Display the JFE User Interface*

Description

Start the JFE GUI (graphical user interface)

Usage

```
JFE()
```

Details

After loading the package, in the command prompt, type JFE() to start it. JFE is a menu-driven GUI designed to support the analysis of financial time series data with the aid of several R packages. The version 1.1 focuses on: Firstly, price visualization, including technical charting(by package quantmod); secondly, assets selection based on Performance index(by package PerformanceAnalytics); thirdly, portfolio optimization (by package "fPORTFOLIO").

This command is an internal function to start the JFE GUI. To avoid unexpected problems of time series object, the imported data must be time series object (xts, or timeSeries) loaded by either .RData or .rda, file of .csv or other format is not supported; that is to say, users have only to know how to construct a R time-series object.

If execution of All-in-one from backtesting fails, then it is a problem associated with undocumented functions. Please re-install this package from Github via devtools::install_github("tsungwu/JFE"), detailed are also explained in Github and <"http://web.ntnu.edu.tw/~tsungwu/R_DevOps/R_DevOps.htm">.

Value

Generate a menu-driven GUI

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

Examples

```
JFE()
```

---

qqnormPlotX   *QQ Plot*

Description

This function is within the iClick GUI, is executed within iClick.VisOneReturns(dat), the data frame dat has two columns, the first column is date index and the second one is numeric time series data.

Usage

```
qqnormPlotX(X, labels = TRUE, col = "indianred2", pch = 19,
title = TRUE, mtext = TRUE, grid = FALSE, rug = TRUE,
scale = TRUE)
```

Arguments

X	A timeSeries object, single time series returns.
labels	Whether to generate label for the graph.
col	String for color.
pch	Line options.
title	Whether to generate title for the graph.
mtext	Whether to generate main text for the graph.
grid	Whether to use grid in plot.
rug	Whether to add rug.
scale	Whether to scale the data.

Details

This function is an internal function of iClick GUI, which is executed on iClick.VisOneReturns GUI.

Value

Plot

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

See Also

Functions in fBasics.

---

riskOptimalPortfolio   *Compute risk optimal portfolios maxDD, aveDD and CDaR*

Description

It calls FRAPO to compute risk optimal portfolio satisfying the constraint of draw downs and returns a S4 object of class fPORTFOLIO.

Usage

```
riskOptimalPortfolio(data, Type="AveDD",value)
```

Arguments

data	timeSeries object of price data. Please remember the asset data must be price, not returns.
Type	Drawdown types, we call package FRAPO to support three methods:"maxDD","aveDD",and "CDaR". For details, please see document of package FRAPO.
value	Positive numerical number for Type.

Details

The risk optimal portfolio calls FRAPO and wrapp the results as a S4 object of class fPORTFOLIO, all get functions of fPORTFOLIO are applicable.

Value

returns an S4 object of class "fPORTFOLIO".

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

References

Roncalli Thierry, *Introduction to Risk parity and Budgeting*, 2014, CRC inc..
See also packages fPORTFOLIO and FRAPO

Examples

```
# Risk optimal portfolio takes time, example below is commented.
data(LPP2005,package="fPortfolio")
Data =  LPP2005[,1:6]#select 6 assets price
Data.RET=timeSeries::returns(Data) # Transform into returns to compute VALUE below
#VALUE=abs(mean(drawdowns(apply(Data.RET,1,mean))))
#output=riskOptimalPortfolio(Data,Type="AveDD",value=VALUE) # data input must be price.
#show(output)
```

```
#getWeights(output)
#getCovRiskBudgets(output)
```

---

riskParityPortfolio   *Compute risk parity portfolio*

Description

It calls FRAPO to compute portfolio weights with equal risk contribution, or equal covariance risk budget, then returns a S4 object of class fPORTFOLIO.

Usage

```
riskParityPortfolio(data, covmat="cov", strategy="minrisk",Type="MV")
```

Arguments

data	timeSeries object of returns data
covmat	Function to compute mltvariate covariance matrix, we support five methods:"cov","ledoitWolf","shrink",": The default is sample covariance "cov".
strategy	strategyPortfolio as in package fPortfolio, we support 5 cases in fPortfolio package: "GMVP","maxreturn","minrisk", "tangency" and "All Assets". The default is "minrisk".
Type	portfolio type as in package fPortfolio, the default is "MV".

Details

The risk parity portfolio has two options: the first is to select a subset of assets and compute risk parity weights. To this end, we implement one of four portfolio strategies: "GMVP","maxreturn","minrisk", "tangency". The idea is that each portfolio strategy will pick the desirable assets by assigning weights, the assets with non-zero weights are selected ones; afterwards, we compute risk parity weights of these assets. Secondly, for "All Assets", all assets are included and compute an optimal weight vector satisfying risk parity condition,namely, equal risk contribution or covariance risk budget.

GMVP or Global minimum risk Portfolio: The function minvariancePortfolio returns the portfolio with the minimal risk on the efficient frontier. To find the minimal risk point the target risk returned by the function efficientPortfolio is minimized.

tangency or maximal returns/risk ratio Portfolio: The function tangencyPortfolio returns the portfolio with the highest return/risk ratio on the efficient frontier. For the Markowitz portfolio this is the same as the Sharpe ratio. To find this point on the frontier the return/risk ratio calculated from the target return and target risk returned by the function .

minrisk or Minumum Risk: The function minriskPortfolio is an efficient portfolio which lies on the efficient frontier. The efficientPortfolio function returns the properties of the efficient portfolio as an S4 object of class fPORTFOLIO

maxreturn or Maximum Return Portfolio: The function `maxreturnPortfolio` returns the portfolio with the maximal return for a fixed target risk.

Risk parity portfolio calls `FRAPO`, which requires symmetric covariance matrices, so far we support only five covariance methods.

Value

returns an S4 object of class `"fPORTFOLIO"`.

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University.

References

Roncalli Thierry, *Introduction to Risk parity and Budgeting*, 2014, CRC inc..
See also packages `fPORTFOLIO` and `FRAPO`

Examples

```
data(assetReturns)
assetReturns=assetReturns[,11:15]
output=riskParityPortfolio(assetReturns, covmat="cov", strategy="minrisk")
show(output)
getWeights(output)
getCovRiskBudgets(output)
```

---

seriesPlotX   *Plot Time Series Data*

Description

This function is within the iClick GUI, is executed within iClick.VisOneReturns(dat), the data frame dat has two columns, the first column is date index and the second one is numeric time series data.

Usage

```
seriesPlotX(x,labels=TRUE,type="l",col="indianred2",
ylab="Value", title=TRUE, grid=TRUE, box=TRUE, rug=TRUE)
```

Arguments

x	A timeSeries object, single time series returns.
labels	Whether to generate label for the graph.
type	Type of graph.
col	Options for color.
ylab	String label for Y axis.
title	Whether to generate title for the graph.
grid	Whether to generate grid for the graph.
box	Whether to put the plot into a box.
rug	Whether to add rug.

Details

This function is an internal function of iClick GUI, which is executed on iClick.VisOneReturns GUI.

Value

Plot

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

See Also

fBasics

VIF_no   *VIF test for mullticolinearity*

Description

This function tests for mullticolinearity.

Usage

```
VIF_no(obj)
```

Arguments

obj	A lm object

Details

This function is an internal function of iClick GUI, which is executed on iClick.lm GUI.

Value

Test statistic

Author(s)

Ho Tsung-wu <tsungwu@ntnu.edu.tw>, College of Management, National Taiwan Normal University

Index