Package 'iClick'

November 23, 2017

Type Package

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

Version 1.3

Date 2017-11-23

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

License GPL (>= 2)

LazyData TRUE

LazyLoad yes

Depends lattice,rugarch,tcltk,sandwich

Imports boot, car, coefplot, fBasics, forecast, grid, lmtest, lubridate, openair, papeR, timeDate, timeSeries

NeedsCompilation no

Repository CRAN

Date/Publication 2017-11-23 12:06:02 UTC

R topics documented:

`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)

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`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@mail.shu.edu.tw>

See Also

Functions in fBasics.

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calendarHeat *Calendar Heapmap Plot*

Description

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

Usage

```
calendarHeat(values, ncolors = 99, color = "r2b", date.form = "%Y-%m-%d")
```

Arguments

values	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.

Details

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

Value

Plot

Author(s)

Ho Tsungwu <tsungwu@mail.shu.edu.tw>

`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@mail.shu.edu.tw>

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 = "l", 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 Tsungwu <tsungwu@mail.shu.edu.tw>

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@mail.shu.edu.tw>

See Also

Functions in fBasics.

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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@mail.shu.edu.tw>

See Also

Functions in fBasic and fAssets.

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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>

`FFplusMOM` *Data of Fama-French beta of 811 listed companies of SSEC*

Description

Average data of 811 listed companies of SSEC, 2001/1/03~2012

Usage

```
data("FFplusMOM")
```

Format

A data frame with 811 observations on the following 4 variables.

`company` company code

`RET` company-specific average returns

`MK_BETA` CAPM factor beta

`HML_BETA` High-Minus-Low factor beta

`SMB_BETA` Small-Minus-Big factor beta

`MOM_BETA` Momemtum factor beta

Details

Daily stock returns of 24 world national markets.

Source

Yahoo finance.

Examples

```
data(FFplusMOM)
```

IBM *Daily Price Data of IBM*

Description

Daily price data of IBM, 2007/1/3~2015/10/29

Usage

```
data("IBM")
```

Format

A data frame with 2223 observations on the following 6 variables.

`X` A date string

`IBM.OPEN` A numeric vector

`IBM.HIGH` A numeric vector

`IBM.LOW` A numeric vector

`IBM.CLOSE` A numeric vector

`IBM.VOLUME` A numeric vector

`IBM.ADJ.CLOSE` A numeric vector

Details

Daily stock price data of IBM.

Source

Yahoo finance.

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	dat has two forms:(1) It may be a 2-column data frame, with the 1-st column is the date string, and the 2nd column is the numeric return series. (2) It can also be created as a ts() object as a none daily time series. However, the ts object may not be suitable for some financial time series returns plot, for example, drawdown.
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@mail.shu.edu.tw>

See Also

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

Examples

```
##External data
data("returnsDaily24")
y=returnsDaily24[,c(1,5)]

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

iClick.ARIMA(y)
```

```
#More
iClick.ARIMA(y,AR = 2, MA = 2, n.ahead = 12, ic = "bic")
```

`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`	dat has two forms:(1) It may be a 2-column data frame, with the 1-st column is the date string, and the 2nd column is the numeric return series. (2) It can also be created as a ts() object as a none daily time series. However, the ts object may not be suitable for some financial time series returns plot, for example, drawdown.
`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@mail.shu.edu.tw>

See Also

library(rugarch)

Examples

```
##==External data
#data("returnsDaily24")
#y=returnsDaily24[,c(1,5)]

##== 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@mail.shu.edu.tw>

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	DAT must be a 2-column data frame with the 1-st column as the date string, and the 2nd column is the numeric return series.
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.

Value

Output GUI

Author(s)

Ho Tsungwu <tsungwu@mail.shu.edu.tw>

Examples

```
#data("IBM")
#assetPrice=IBM[,c(1,4)]
#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	dat has two forms:(1) It may be a 2-column data frame, with the 1-st column is the date string, and the 2nd column is the numeric return series. (2) It can also be created as a ts() object as a none daily time series. However, the ts object may not be suitable for some financial time series returns plot, for example, drawdown.

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@mail.shu.edu.tw>

Examples

```
##== External data
#data("returnsDaily24")
#y=returnsDaily24[,c(1,10)]  #Select the fifth variable

##== Simulation data
dat=rnorm(100,5,1)
y=ts(dat, start = c(1970, 1), frequency = 12)
iClick.VisOneReturns(y)
```

---

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@mail.shu.edu.tw>

See Also

Functions in fBasics.

`returnsDaily24` *Daily Returns Data of 24 Markets*

Description

Daily returns data of 24 world national market index, 2001/1/03~2013/9/24

Usage

```
data("returnsDaily24")
```

Format

A data frame with 3320 observations on the following 24 variables.

`Dates` Time string

`AEX` a numeric vector of national market

`AORD` a numeric vector of national market

`ATX` a numeric vector of national market

`BFX` a numeric vector of national market

`BVSP` a numeric vector of national market

`FCHI` a numeric vector of national market

`FTSE` a numeric vector of national market

`FTSEMIB.MI` a numeric vector of national market

`GD.AT` a numeric vector of national market

`GDAXI` a numeric vector of national market

`GSPC` a numeric vector of national market

`GSPTSE` a numeric vector of national market

`HSI` a numeric vector of national market

`JKSE` a numeric vector of national market

`KLSE` a numeric vector of national market

`KS11` a numeric vector of national market

`MERV` a numeric vector of national market

`MXX` a numeric vector of national market

N225 a numeric vector of national market

OMX a numeric vector of national market

SSEC a numeric vector of national market

SSMI a numeric vector of national market

STI a numeric vector of national market

TWII a numeric vector of national market

Details

Daily stock returns of 24 world national markets.

Source

Yahoo finance.

`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@mail.shu.edu.tw>

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@mail.shu.edu.tw>

Index