

# Package ‘plotseries’

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**Type** Package

**Title** Time-Series Plots

**Version** 0.4.0

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**Description** Plot financial time-series, such as a portfolio value or stock price. The package provides a single function, `plotseries()`, that creates high-quality, informative, but uncluttered graphics. Multiple series can be aggregated into quantile and fan plots, the code for which is based on chapter 15 of “Numerical Methods and Optimization in Finance”, second edition, by M. Gilli, D. Maringer and E. Schumann (2019, ISBN:978-0128150658). Also supported is plotting streaks, i.e. periods of uninterrupted up or down movement.

**Imports** PMwR, datetimetools, grDevices, graphics, neighbours, utils, zoo

**Suggests** NMOF, bundesbank, BISdata

**License** GPL-3

**URL** <https://enricoschumann.net/R/packages/plotseries/> ,  
<https://git.sr.ht/~enricoschumann/plotseries/> ,  
<https://github.com/enricoschumann/plotseries>

**NeedsCompilation** no

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plotseries

*Plot a Financial Time-Series*


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### Description

Plot a financial time-series and add annotation, such as total return.

### Usage

```
plotseries(series, ...)

## Default S3 method:
plotseries(series, t, col, log.scale = FALSE,
  ##
  labels = NA, labels.show = TRUE, labels.cex = 0.75,
  labels.pos = 4, labels.col = NULL, labels.at = NULL,
  labels.at.offset = NULL, labels.min.height = 0.05,
  ##
  returns.show = TRUE,
  returns.period = "ann",
  ##
  dollars.show = FALSE, dollars.arrow = "\u2192",
  dollars.currency = "USD",
  ##
  last.show = FALSE, last.format = NULL,
  ##
  ylab = "", ylim = NULL, lwd = 1,
  type = "l", lty = 1,
  ##
  main = "", main.cex = 0.7, main.col = grey(0.5),
  y.axis = TRUE, y.axis.pos = "left",
  y.grid = TRUE, y.grid.at = NULL, y.grid.col = grey(0.8),
  y.labels = TRUE, y.labels.at = NULL, y.labels.at.add = 1,
  y.labels.at.remove = 0,
  ##
  time.axis = TRUE, time.grid = TRUE,
  time.grid.at = NULL, time.grid.col = grey(0.8),
  time.labels = TRUE,
  time.labels.at = NULL, time.labels.format = NULL,
  add.yearly.grid = FALSE,
  ##
  par.list = list(),
  reset.par = TRUE,
  axis.cex = 1, axis.col = grey(0.5),
  white.underlay = FALSE, white.underlay.width = 2,
  font.family = "", colon = ": ", percent = "%", big.mark = "",
  bm = NULL, bm.returns = FALSE,
```

```

xpd.hlines = FALSE, xpd.vlines = FALSE, series.type = "level",
lines = FALSE, do.scale1 = series.type != "streaks", probs = NULL,
##
streaks.up = 0.2, streaks.down = -streaks.up, streaks.vlines = FALSE,
streaks.relative = TRUE, streaks.up.labels.y.mult = 1.1,
streaks.up.labels.pos = NULL, streaks.up.labels.srt = 90,
streaks.up.labels.col = NULL,
streaks.up.labels.cex = 0.6,
##
streaks.down.labels.y.mult = if (streaks.relative) 0.9 else 1.1,
streaks.down.labels.pos = NULL, streaks.down.labels.srt = 90,
streaks.down.labels.col = NULL,
streaks.down.labels.cex = streaks.up.labels.cex,
##
median.show = TRUE, median.col = grey(0.4),
##
warn1 = TRUE,
...)

## S3 method for class 'zoo'
plotseries(series, ..., bm = NULL)

```

### Arguments

series	numeric or a zoo series; may be a matrix, with series arranged in columns
t	timestamp, typically of class <a href="#">Date</a>
series.type	string: 'level' (the default), 'quantile', 'fan', or 'streaks'
col	character: colors
...	other parameters
lines	logical: if TRUE, add to existing plot

Customizing labels:

labels	character vector
labels.show	logical: a vector with as many elements as series has columns, recycled if necessary
labels.at	an optional numeric vector to provide the vertical positions of the labels
labels.at.offset	an optional numeric vector to provide the vertical positions <i>offsets</i> of the labels, in particular for shifting overlapping labels
labels.min.height	numeric
labels.cex	numeric
labels.pos	numeric
labels.col	NULL, TRUE or character

last.show	logical
last.format	string
log.scale	logical
y.labels	logical or character
y.labels.at	numeric
y.labels.at.add	
	numeric
y.labels.at.remove	
	numeric
ylab	logical
ylim	numeric
main	a string
main.cex	numeric
main.col	character
y.axis	logical
y.axis.pos	logical
time.axis	logical
time.labels.at ..	
time.labels.format	
	..
time.labels	..
time.grid	logical
time.grid.at	..
time.grid.col	a colour
add.yearly.grid	
	logical
y.grid	logical
y.grid.at	numeric
y.grid.col	a colour
white.underlay	logical
white.underlay.width	
	numeric
axis.cex	numeric
axis.col	a colour (see <a href="#">colours</a> )
lwd, lty	numeric; see <a href="#">plot</a>
type	numeric; see <a href="#">plot</a>
font.family	logical
dollars.show	logical
dollars.arrow	character. A safe choice (because it is ASCII) is ->.

dollars.currency string

par.list a list with named elements, such as `list(las = 1, mar = c(3, 3, 3, 3))`

reset.par logical: if TRUE, all changed settings for `par` are restored

percent character

big.mark character

bm a zoo series

bm.returns logical

do.scale1 logical

probs a vector probabilities, used for fan and quantile plots. Quantiles are always chosen symmetrically, and values below 0.5 are mirrored; e.g. 0.1 implies 0.9.

streaks.up numeric

streaks.down numeric

streaks.vlines logical

streaks.relative logical

streaks.up.labels.y.mult, streaks.down.labels.y.mult numeric

streaks.up.labels.pos numeric

streaks.up.labels.srt numeric

streaks.up.labels.col a colour

streaks.up.labels.cex, streaks.down.labels.cex relative character size for streaks labels; default is 0.6

streaks.down.labels.pos numeric

streaks.down.labels.srt numeric

streaks.down.labels.col a colour

xpd.hlines logical

xpd.vlines logical

#### Customizing returns:

returns.show logical

returns.period character: default is "ann"; but "i td" (inception to date) may be useful as well

colon character: the separator between series name, and return or last value

#### Customizing medians (only for fan and quantile plot):

median.show logical

median.col a valid colour specification

For fan and quantile plots:

warn1 logical: if `TRUE`, warn if only a single series is provided but a plot based on multiple series is requested

## Details

The function builds on `plot` and is experimental; its argument list is not stable. It is strongly suggested that you pass arguments by name, not by position.

### Plot types:

**level** the default type, a simple line plot

**streaks** see <https://enricoschumann.net/R/packages/PMwR/manual/PMwR.html#drawdowns-streaks>

**quantile** requires a matrix of series: plots quantiles of the series. See the vignette.

**fan** requires a matrix of series: plots series in shades of `grey`. See the vignette.

### Settings to be passed with `par`:

`plotseries` applies the following default settings via `par`:

```
list(las = 1,
     bty = "n",
     mar = c(1.25, 4, 1.25, 4.5),
     tck = 0.01,
     ps = 9.5,
     mgp = c(2, 0.25, 0),
     col.axis = grey(0.5))
```

These parameters can be overwritten by specifying `par.list`.

## Value

The function is primarily called for its side effect. It also returns, invisibly, a list with plotting information.

## Warning

The function is not stable yet.

## Author(s)

Enrico Schumann

## References

Gilli, M., Maringer, D. and Schumann, E. (2019) *Numerical Methods and Optimization in Finance*. 2nd edition. Elsevier. [doi:10.1016/C2017001621X](https://doi.org/10.1016/C2017001621X)

Schumann, E. (2024) *Portfolio Management with R*. <https://enricoschumann.net/PMwR/>

Tufte, E.R.(2001) *The Visual Display of Quantitative Information*. 2nd edition. Graphics Press. (chapter 6, in particular)

**See Also**

[plot](#)

**Examples**

```
series <- French("~/Downloads/French/",
                "10_Portfolios_Prior_12_2_CSV.zip",
                frequency = "monthly",
                weighting = "value",
                price.series = TRUE)
series <- zoo(series, as.Date(row.names(series)))

plotseries(series,
           col = hcl.colors(n = 30, palette = "Greens"),
           add.dollars = FALSE,
           log.scale = TRUE,
           labels = colnames(series))
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