

Package ‘RPESE’

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DSR.SE	<i>Standard Error Estimate for Downside Sharpe Ratio (DSR) of Returns</i>
--------	---

Description

DSR.SE computes the standard error of the downside Sharpe ratio of the returns.

Usage

```
DSR.SE(
  data,
  rf = 0,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[c(1, 4)],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFcor", "retIFcorPW")[1],
  return.coef = FALSE,
  ...
)
```

Arguments

data	Data of returns for one or multiple assets or portfolios.
rf	Risk free rate.
se.method	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor" (default), "IFcorPW", "IFcorAdapt", "BOOTiid" or "BOOTcor".
cleanOutliers	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
fitting.method	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".

d.GLM.EN	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
freq.include	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
freq.par	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
corOut	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
return.coef	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
...	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

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Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  DSR.SE(edhec, se.method = c("IFiid", "IFcor"),
        cleanOutliers = FALSE,
        fitting.method = c("Exponential", "Gamma")[1])
}
```

Description

ES.SE computes the standard error of the expected shortfall of the returns.

Usage

```

ES.SE(
  data,
  p = 0.95,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[1:2],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFCor", "retIFCorPW")[1],
  return.coef = FALSE,
  ...
)

```

Arguments

<code>data</code>	Data of returns for one or multiple assets or portfolios.
<code>p</code>	Confidence level for calculation. Default value is $p = 0.95$.
<code>se.method</code>	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor" (default), "IFcorPW", "IFcorAdapt", "BOOTiid" or "BOOTcor".
<code>cleanOutliers</code>	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
<code>fitting.method</code>	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
<code>d.GLM.EN</code>	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
<code>freq.include</code>	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
<code>freq.par</code>	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
<code>corOut</code>	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
<code>return.coef</code>	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
<code>...</code>	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Xin Chen, <chenx26@uw.edu>

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                   "ED", "FIA", "GM", "LS", "MA",
                   "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  ES.SE(edhec, se.method = c("IFiid", "IFcor"),
        cleanOutliers = FALSE,
        fitting.method = c("Exponential", "Gamma")[1])
}
```

ESratio.SE	<i>Standard Error Estimate for Expected Shortfall Ratio (ESratio) of Returns</i>
------------	--

Description

ESratio.SE computes the standard error of the expected shortfall ratio of the returns.

Usage

```
ESratio.SE(
  data,
  alpha = 0.1,
  rf = 0,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[c(1, 4)],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFCor", "retIFCorPW")[1],
  return.coef = FALSE,
  ...
)
```

Arguments

data	Data of returns for one or multiple assets or portfolios.
alpha	Lower tail probability.
rf	Risk-free interest rate.

<code>se.method</code>	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor", "IFcorPW", "IFcorAdapt" (default), "BOOTiid" or "BOOTcor".
<code>cleanOutliers</code>	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
<code>fitting.method</code>	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
<code>d.GLM.EN</code>	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
<code>freq.include</code>	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
<code>freq.par</code>	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
<code>corOut</code>	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
<code>return.coef</code>	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
<code>...</code>	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  ESratio.SE(edhec, se.method=c("IFiid", "IFcorAdapt"),
             cleanOutliers=FALSE,
             fitting.method=c("Exponential", "Gamma")[1])
}
```

Description

EstimatorSE computes the standard error for specified risk and performance measures.

Usage

```
EstimatorSE(
  data,
  estimator.fun = c("DSR", "ES", "ESratio", "LPM", "Mean", "OmegaRatio", "RachevRatio",
    "robMean", "SD", "SemiSD", "SR", "SoR", "VaR", "VaRratio")[1],
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[1],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  a = 0.3,
  b = 0.7,
  return.coef = FALSE,
  ...
)
```

Arguments

<code>data</code>	Data of returns for one or multiple assets or portfolios.
<code>estimator.fun</code>	Risk or performance measure to compute estimates of standard errors.
<code>se.method</code>	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One of: "IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor", or "none".
<code>cleanOutliers</code>	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
<code>fitting.method</code>	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
<code>d.GLM.EN</code>	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
<code>freq.include</code>	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
<code>freq.par</code>	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
<code>a</code>	First adaptive method parameter.
<code>b</code>	Second adaptive method parameter.

`return.coef` Boolean variable to indicate whether the coefficients of the Exponential or Gamma fit are returned. Default is FALSE.

`...` Additional parameters.

Value

A vector standard error estimates.

Author(s)

Xin Chen, <chenx26@uw.edu>

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the three influence functions based approaches
  EstimatorSE(edhec[, "CA"], se.method = c("IFcor"),
              cleanOutliers = FALSE,
              fitting.method = c("Exponential", "Gamma")[1])
}
```

LPM.SE

Standard Error Estimate for Lower Partial Moment (LPM) of Returns

Description

LPM.SE computes the standard error of the LPM of the returns.

Usage

```
LPM.SE(
  data,
  const = 0,
  order = 1,
  se.method = c("IFIid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[1:2],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
```

```

    freq.include = c("All", "Decimate", "Truncate")[1],
    freq.par = 0.5,
    corOut = c("none", "retCor", "retIFCor", "retIFCorPW")[1],
    return.coef = FALSE,
    ...
)

```

Arguments

<code>data</code>	Data of returns for one or multiple assets or portfolios.
<code>const</code>	Constant threshold.
<code>order</code>	Order for the lower partial moment (should be 1 or 2).
<code>se.method</code>	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor" (default), "IFcorPW", "IFcorAdapt", "BOOTiid" or "BOOTcor".
<code>cleanOutliers</code>	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
<code>fitting.method</code>	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
<code>d.GLM.EN</code>	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
<code>freq.include</code>	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
<code>freq.par</code>	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
<code>corOut</code>	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
<code>return.coef</code>	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
<code>...</code>	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Xin Chen, <chenx26@uw.edu>

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                   "ED", "FIA", "GM", "LS", "MA",
                   "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  LPM.SE(edhec, se.method = c("IFiid", "IFcor"),
         cleanOutliers = FALSE,
         fitting.method = c("Exponential", "Gamma")[1])
}
```

Mean.SE

Standard Error Estimate for Mean of Returns

Description

Mean.SE computes the standard error of the mean of the returns.

Usage

```
Mean.SE(
  data,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[c(1, 4)],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFCor", "retIFCorPW")[1],
  return.coef = FALSE,
  ...
)
```

Arguments

data	Data of returns for one or multiple assets or portfolios.
se.method	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor", "IFcorPW", "IFcorAdapt" (default), "BOOTiid" or "BOOTcor".
cleanOutliers	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.

fitting.method	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
d.GLM.EN	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
freq.include	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
freq.par	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
corOut	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
return.coef	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
...	Additional parameters.

Value

A vector or a list depending on se.method

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  Mean.SE(edhec, se.method = c("IFiid", "IFcorAdapt"),
          cleanOutliers = FALSE,
          fitting.method = c("Exponential", "Gamma")[1])
}
```

OmegaRatio.SE

Standard Error Estimate for Omega Ratio of Returns

Description

OmegaRatio.SE computes the standard error of the Omega ratio of the returns.

Usage

```
OmegaRatio.SE(
  data,
  const = 0,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[c(1, 4)],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFCor", "retIFCorPW")[1],
  return.coef = FALSE,
  ...
)
```

Arguments

<code>data</code>	Data of returns for one or multiple assets or portfolios.
<code>const</code>	Constant threshold.
<code>se.method</code>	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor", "IFcorPW", "IFcorAdapt" (default), "BOOTiid", "BOOTcor".
<code>cleanOutliers</code>	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
<code>fitting.method</code>	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
<code>d.GLM.EN</code>	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
<code>freq.include</code>	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
<code>freq.par</code>	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
<code>corOut</code>	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
<code>return.coef</code>	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
<code>...</code>	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  OmegaRatio.SE(edhec, se.method = c("IFiid", "IFcorAdapt")[1],
                cleanOutliers = FALSE,
                fitting.method = c("Exponential", "Gamma")[1])
}
```

printSE

Formatted Output for Standard Errors Functions in RPESE

Description

printSE returns a formatted output from standard error functions from RPESE.

Usage

```
printSE(SE.data, round.digit = 3, round.out = TRUE)
```

Arguments

SE.data	Standard error estimates output from RPESE functions.
round.digit	Number of digits for rounding.
round.out	Round data (TRUE) with round.digit number of digits. Default is TRUE.

Value

A data frame with formatted output from standard error functions from RPESE.

Author(s)

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Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                   "ED", "FIA", "GM", "LS", "MA",
                   "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  ES.out <- ES.SE(edhec, se.method = c("IFiid", "IFcor"),
                  cleanOutliers = FALSE,
                  fitting.method = c("Exponential", "Gamma")[1])
  # Print the output
  printSE(ES.out)
}
```

RachevRatio.SE

Standard Error Estimate for Rachev Ratio of Returns

Description

RachevRatio.SE computes the standard error of the Rachev ratio of the returns.

Usage

```
RachevRatio.SE(
  data,
  alpha = 0.1,
  beta = 0.1,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[c(1, 4)],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFCor", "retIFCorPW")[1],
  return.coef = FALSE,
  ...
)
```

Arguments

data	Data of returns for one or multiple assets or portfolios.
alpha	Lower tail probability.

<code>beta</code>	Upper tail probability.
<code>se.method</code>	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor", "IFcorPW", "IFcorAdapt" (default), "BOOTiid" or "BOOTcor".
<code>cleanOutliers</code>	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
<code>fitting.method</code>	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
<code>d.GLM.EN</code>	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
<code>freq.include</code>	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
<code>freq.par</code>	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
<code>corOut</code>	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
<code>return.coef</code>	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
<code>...</code>	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  RachevRatio.SE(edhec, se.method = c("IFiid", "IFcorAdapt"),
                 cleanOutliers = FALSE,
                 fitting.method = c("Exponential", "Gamma")[1])
}
```

robMean.SE	<i>Standard Error Estimate for Robust Location (Mean) M-Estimator of Returns</i>
------------	--

Description

robMean.SE computes the standard error of the robust location (mean) M-estimator of the returns.

Usage

```
robMean.SE(
  data,
  family = c("mopt", "opt", "bisquare")[1],
  eff = 0.95,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[c(1, 4)],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFcor", "retIFcorPW")[1],
  return.coef = FALSE,
  ...
)
```

Arguments

data	Data of returns for one or multiple assets or portfolios.
family	Family for robust m-estimator of location. Must be one of "mopt" (default), "opt" or "bisquare".
eff	Tuning parameter for the normal distribution efficiency. Default is 0.99.
se.method	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor", "IFcorPW", "IFcorAdapt" (default), "BOOTiid" or "BOOTcor".
cleanOutliers	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
fitting.method	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
d.GLM.EN	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
freq.include	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
freq.par	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.

corOut	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
return.coef	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
...	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  robMean.SE(edhec, se.method = c("IFiid", "IFcorAdapt"),
             fitting.method = c("Exponential", "Gamma")[1],
             family = "mopt", eff = 0.95)
}
```

SD.SE

*Standard Error Estimate for Standard Deviation (SD) of Returns***Description**

SD.SE computes the standard error of the standard deviation of the returns.

Usage

```
SD.SE(
  data,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[1:2],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
```

```

    freq.par = 0.5,
    corOut = c("none", "retCor", "retIFCor", "retIFCorPW")[1],
    return.coef = FALSE,
    ...
)

```

Arguments

<code>data</code>	Data of returns for one or multiple assets or portfolios.
<code>se.method</code>	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor" (default), "IFcorPW", "IFcorAdapt" (default), "BOOTiid" or "BOOTcor".
<code>cleanOutliers</code>	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
<code>fitting.method</code>	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
<code>d.GLM.EN</code>	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
<code>freq.include</code>	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
<code>freq.par</code>	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
<code>corOut</code>	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
<code>return.coef</code>	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
<code>...</code>	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```

# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
}

```

```

# Computing the standard errors for
# the two influence functions based approaches
SD.SE(edhec, se.method = c("IFiid", "IFcor", "IFcorAdapt"),
      cleanOutliers = FALSE,
      fitting.method = c("Exponential", "Gamma")[1])
}

```

SemiSD.SE	<i>Standard Error Estimate for Semi-Standarded Deviation (SemiSD) of Returns</i>
-----------	--

Description

SemiSD.SE computes the standard error of the SSD of the returns.

Usage

```

SemiSD.SE(
  data,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[1:2],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFcor", "retIFcorPW")[1],
  return.coef = FALSE,
  ...
)

```

Arguments

data	Data of returns for one or multiple assets or portfolios.
se.method	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor" (default), "IFcorPW", "IFcorAdapt", "BOOTiid", "BOOTcor", or "none".
cleanOutliers	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
fitting.method	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
d.GLM.EN	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
freq.include	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."

freq.par	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
corOut	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
return.coef	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
...	Additional parameters.

Value

A vector or a list depending on se.method.

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  SemiSD.SE(edhec, se.method = c("IFiid", "IFcor"),
            cleanOutliers = FALSE,
            fitting.method = c("Exponential", "Gamma")[1])
}
```

SoR.SE

Standard Error Estimate for Sortino Ratio (SoR) of Returns

Description

SoR.SE computes the standard error of the Sortino ratio of the returns.

Usage

```
SoR.SE(
  data,
  const = 0,
  threshold = c("mean", "const")[1],
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[c(1, 4)],
```

```

cleanOutliers = FALSE,
fitting.method = c("Exponential", "Gamma")[1],
d.GLM.EN = 5,
freq.include = c("All", "Decimate", "Truncate")[1],
freq.par = 0.5,
corOut = c("none", "retCor", "retIFCor")[1],
return.coef = FALSE,
...
)

```

Arguments

<code>data</code>	Data of returns for one or multiple assets or portfolios.
<code>const</code>	Minimum acceptable return for threshold.
<code>threshold</code>	Parameter to determine whether we use a "mean" or "const" threshold.
<code>se.method</code>	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor", "IFcorPW", "IFcorAdapt" (default), "BOOTiid" or "BOOTcor".
<code>cleanOutliers</code>	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
<code>fitting.method</code>	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
<code>d.GLM.EN</code>	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
<code>freq.include</code>	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
<code>freq.par</code>	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
<code>corOut</code>	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
<code>return.coef</code>	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
<code>...</code>	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  SoR.SE(edhec, se.method = c("IFiid", "IFcorAdapt"),
        cleanOutliers = FALSE,
        fitting.method = c("Exponential", "Gamma")[1])
}
```

SR.SE

Standard Error Estimate for Sharpe Ratio (SR) of Returns

Description

SR.SE computes the standard error of the Sharpe ratio of the returns.

Usage

```
SR.SE(
  data,
  rf = 0,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[c(1, 4)],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFcor", "retIFcorPW")[1],
  return.coef = FALSE,
  ...
)
```

Arguments

data	Data of returns for one or multiple assets or portfolios.
rf	Risk free rate.
se.method	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor", "IFcorPW", "IFcorAdapt" (default), "BOOTiid" or "BOOTcor".

<code>cleanOutliers</code>	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
<code>fitting.method</code>	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
<code>d.GLM.EN</code>	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
<code>freq.include</code>	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
<code>freq.par</code>	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
<code>corOut</code>	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
<code>return.coef</code>	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
<code>...</code>	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  SR.SE(edhec, se.method = c("IFiid", "IFcorAdapt"),
        cleanOutliers = FALSE,
        fitting.method = c("Exponential", "Gamma")[1])
}
```

VaR.SE

*Standard Error Estimate for Value-at-Risk (VaR) of Returns***Description**

VaR.SE computes the standard error of the value-at-risk of the returns.

Usage

```
VaR.SE(
  data = NULL,
  alpha = 0.95,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[1:2],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFCor", "retIFCorPW")[1],
  return.coef = FALSE,
  ...
)
```

Arguments

data	Data of returns for one or multiple assets or portfolios.
alpha	Confidence level for calculation. Default is alpha=0.95.
se.method	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor" (default), "IFcorPW", "IFcorAdapt", "BOOTiid" or "BOOTcor".
cleanOutliers	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
fitting.method	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
d.GLM.EN	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
freq.include	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
freq.par	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
corOut	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
return.coef	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
...	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  VaR.SE(edhec, se.method = c("IFiid", "IFcor"),
        cleanOutliers = FALSE,
        fitting.method = c("Exponential", "Gamma")[1])
}
```

VaRratio.SE

Standard Error Estimate for Value-at-Risk Ratio (VaRratio) of Returns

Description

`VaRratio.SE` computes the standard error of the value-at-risk ratio of the returns.

Usage

```
VaRratio.SE(
  data,
  alpha = 0.1,
  rf = 0,
  se.method = c("IFiid", "IFcor", "IFcorAdapt", "IFcorPW", "BOOTiid", "BOOTcor")[c(1, 4)],
  cleanOutliers = FALSE,
  fitting.method = c("Exponential", "Gamma")[1],
  d.GLM.EN = 5,
  freq.include = c("All", "Decimate", "Truncate")[1],
  freq.par = 0.5,
  corOut = c("none", "retCor", "retIFcor", "retIFcorPW")[1],
  return.coef = FALSE,
  ...
)
```

Arguments

<code>data</code>	Data of returns for one or multiple assets or portfolios.
<code>alpha</code>	The tail probability of interest.
<code>rf</code>	Risk-free interest rate.
<code>se.method</code>	A character string indicating which method should be used to compute the standard error of the estimated standard deviation. One or a combination of: "IFiid" (default), "IFcor", "IFcorPW", "IFcorAdapt" (default), "BOOTiid" or "BOOTcor".
<code>cleanOutliers</code>	Boolean variable to indicate whether the pre-whitening of the influence functions TS should be done through a robust filter. Default if FALSE.
<code>fitting.method</code>	Distribution used in the standard errors computation. Should be one of "Exponential" (default) or "Gamma".
<code>d.GLM.EN</code>	Order of the polynomial for the Exponential or Gamma fitting. Default polynomial order of 5.
<code>freq.include</code>	Frequency domain inclusion criteria. Must be one of "All" (default), "Decimate" or "Truncate."
<code>freq.par</code>	Percentage of the frequency used if "freq.include" is "Decimate" or "Truncate." Default is 0.5.
<code>corOut</code>	Return correlation of the returns or the influence function transformed returns. Must be one of "retCor", "retIFCor" or "none" (default).
<code>return.coef</code>	Boolean variable to indicate whether the coefficients of the penalized GLM fit are returned. Default if FALSE.
<code>...</code>	Additional parameters.

Value

A vector or a list depending on `se.method`.

Author(s)

Anthony-Alexander Christidis, <anthony.christidis@stat.ubc.ca>

Examples

```
# Examples using PerformanceAnalytics data
if (requireNamespace("PerformanceAnalytics", quietly = TRUE)) {
  # Loading data
  data(edhec, package = "PerformanceAnalytics")
  # Changing the data colnames
  names(edhec) <- c("CA", "CTA", "DIS", "EM", "EMN",
                  "ED", "FIA", "GM", "LS", "MA",
                  "RV", "SS", "FOF")
  # Computing the standard errors for
  # the two influence functions based approaches
  VaRatio.SE(edhec, se.method = c("IFiid", "IFcorAdapt"),
             cleanOutliers = FALSE,
```

```
    fitting.method = c("Exponential", "Gamma")[1])  
  }
```

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