Package ‘StockDistFit’

May 9, 2023

Title Fit Stock Price Distributions

Version 1.0.0

Description The 'StockDistFit' package provides functions for fitting probability distributions to stock price data. The package uses maximum likelihood estimation to find the best-fitting distribution for a given stock. It also offers a function to fit several distributions to one or more assets and compare the distribution with the Akaike Information Criterion (AIC) and then pick the best distribution. References are as follows: Siew et al. (2008) <https://www.jstage.jst.go.jp/article/jappstat/37/1/37_1_1/_pdf/-char/ja> and Benth et al. (2008) <https://books.google.co.ke/books?hl=en&lr=&id=MHNpDQAAQBAJ&oi=fnd&pg=PR7&dq=Stochastic+modeling+of+commodity+prices+using+the+Variance+Gamma+(VG)+model.+&ots=YNILZQgEYg&sig=ZXtGU0l4oqXHyPZ-08x5i7N3w&redir_esc=y#v=onepage&q&f=false>.

License GPL (>= 3)

Encoding UTF-8

RoxygenNote 7.2.3

Imports dplyr, fGarch, fBasics, fitdistrplus, xts, stats, magrittr, zoo, quantmod, utils, ghyp

Suggests knitr, rmarkdown

VignetteBuilder knitr

Depends R (>= 2.10)

LazyData true

NeedsCompilation no

Author Brian Njuguna [aut, cre] (<https://orcid.org/0009-0002-2119-904X>), Stanley Sayianka [ctb]

Maintainer Brian Njuguna <briannjuguna133@gmail.com>

Repository CRAN

Date/Publication 2023-05-09 09:00:08 UTC

R topics documented:

AAPL ................................................................. 2
Description

This dataset contains the daily stock prices of Apple Inc. (AAPL) from January 2, 2013 to April 30, 2023. The data includes the open, high, low, and close prices, as well as the volume and adjusted close price.

Usage

data("AAPL")

Format

A data frame with 2599 observations on the following 7 variables.

- Date: a character vector
- Open: a numeric vector
- High: a numeric vector
AMZN

Low a numeric vector
Close a numeric vector
Volume a numeric vector
Adjusted a numeric vector

References

Data source: Yahoo Finance

Examples

data(AAPL)
str(AAPL); plot(AAPL)

---

AMZN

Amazon.com Inc. Stock Prices Dataset

Description

This dataset contains the daily stock prices of Amazon.com Inc. (AMZN) from January 2, 2013 to April 30, 2023. The data includes the open, high, low, and close prices, as well as the volume and adjusted close price.

Usage

data("AMZN")

Format

A data frame with 2599 observations on the following 7 variables.

Date a character vector
Open a numeric vector
High a numeric vector
Low a numeric vector
Close a numeric vector
Volume a numeric vector
Adjusted a numeric vector

References

Data source: Yahoo Finance

Examples

data(AMZN)
str(AMZN); plot(AMZN)
annual_return  Compute Annual Returns of a Vector.

Description
This function takes a vector of asset returns and computes annual returns.

Usage
annual_return(vec)

Arguments
vec  a numeric vector of asset returns as an xts object with dates as rownames.

Value
A numeric vector of annual returns.

See Also
weekly_return, monthly_return

Examples

# Compute annual returns of an asset vector
require(xts)
asset_returns_xts <- xts(c(29.2, 30.0, 36.2, 30.4, 38.5, -35.6, 34.5),
order.by = as.Date(c("2017-05-07", "2018-05-07", "2019-05-07",
"2020-05-07", "2021-05-07", "2022-05-07",
"2023-05-07")),
annual_return(asset_returns_xts)

asset_loader  Load Asset Data.

Description
This function reads in asset data stored in .csv format and returns a time-series object of the asset data.

Usage
asset_loader(data_path, assets, price_col)
**Arguments**

- `data_path` The path to the directory containing the .csv files.
- `assets` A vector of asset names to be loaded.
- `price_col` The name of the price column to be selected (e.g. Open, Close, Low, High).

**Value**

An xts object with asset data.

**Note**

The Date column in the files should be of the format "%m/%d/%y", that is 01/14/13 with 01 implying the month, 14 the date and 13 the year.

The data to be loaded must be in .csv type and also must have the Date, Open, Low, High and Close Prices of the asset or assets to be loaded.

**Examples**

```r
asset_loader(system.file("extdata", package = "StockDistFit"), c("AAPL", "TSLA"), "Close")
```

---

**best_dist**

*Find the best distribution based on AIC values*

**Description**

This function takes in a data frame of AIC values for different distributions and a vector of distribution names, and returns a data frame with the best distribution for each row based on the minimum AIC value. You can also write the distribution as "norm" or "cauchy" provided they follow the order in the data frame.

**Usage**

```r
best_dist(aic_df, dist_names)
```

**Arguments**

- `aic_df` A data frame containing AIC values for different distributions
- `dist_names` A vector of distribution names corresponding to the AIC values

**Value**

A data frame with the best distribution for each row based on the minimum AIC value
Note
This function takes the data frame obtained from fit_multiple_dist function

Examples

data <- asset_loader(system.file("extdata", package = "StockDistFit"), c("AAPL", "TSLA"), "Close")
df = fit_multiple_dist(c("norm_fit", "cauchy_fit"), data)
best_dist(df, c("norm_fit", "cauchy_fit"))

cauchy_fit Fit Cauchy Distribution to a vector of returns/stock prices.

Description
This function fits the Cauchy distribution to a given data vector using the fitdist function from the fitdistrplus package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.

Usage
cauchy_fit(vec)

Arguments
vec a numeric vector containing the data to be fitted.

Value
a list containing the following elements:

par a numeric vector of length 2 containing the estimated values for the parameters of the fitted distribution: lambda (location) and alpha (scale).
aic the Akaike information criterion (AIC) value for the fitted distribution.
bic the Bayesian information criterion (BIC) value for the fitted distribution.

See Also
norm_fit, t_fit, ghd_fit, hd_fit, sym.ghd_fit, sym.hd_fit, vg_fit, sym.vg_fit, nig_fit, ged_fit, skew.t_fit, skew.normal_fit, skew.ged_fit
Examples

```r
stock_prices <- c(10, 11, 12, 13, 14, 17, 18)
returns <- diff(log(stock_prices))
cauchy_fit(returns)
```

---

**data.cumret**

*Compute Cumulative Returns of a Vector.*

**Description**

This function takes a vector of asset returns and computes the cumulative wealth generated over time, assuming that the initial wealth was initial_eq.

**Usage**

```
data.cumret(df_ret, initial_eq)
```

**Arguments**

- `df_ret` an xts object of asset returns, with dates as rownames.
- `initial_eq` a numeric value representing the initial wealth.

**Value**

An xts object of wealth generated over time.

**See Also**

`weekly_return`, `monthly_return`, `annual_return`

**Examples**

```r
# Compute cumulative returns of an asset vector
library(quantmod)
asset_returns_xts <- xts(c(29.2, 30.0, 36.2, 30.4, 38.5, -35.6, 34.5),
                        order.by = as.Date(c("2023-05-01", "2023-05-02", "2023-05-03",
                                         "2023-05-04", "2023-05-05", "2023-05-06",
                                         "2023-05-07")))
data.cumret(asset_returns_xts, initial_eq = 100)
```
fit_multiple_dist  

Fits Multiple Probability Distributions to several assets/stock prices.

Description

This function fits multiple probability distributions to a dataframe and calculates the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) for each distribution and then returns a data frame of the AIC values for each asset where the column names are the names of the fitted distributions.

Usage

fit_multiple_dist(dist_names, dataframe)

Arguments

dist_names  a character vector of distribution names to be fitted.
dataframe  a dataframe containing the data to be fitted.

Details

Note that the available distributions are
norm_fit - Normal distribution
t_fit - Student’s t-distribution
cauchy_fit - Cauchy distribution
ghd_fit - Generalized hyperbolic distribution
hd_fit - Hyperbolic distribution
sym.ghd_fit - Symmetric generalized hyperbolic distribution
sym.hd_fit - Symmetric hyperbolic distribution
vg_fit - Variance-gamma distribution
sym.vg_fit - Symmetric variance-gamma distribution
nig_fit - Normal-inverse Gaussian distribution
ged_fit - Generalized error distribution
skew.t_fit - Skew Student’s t-distribution
skew.normal_fit - Skew normal distribution
skew.ged_fit - Skew generalized error distribution

Also note that the distribution to be fitted from the above list must include the '_fit'. The function can also fit one distribution to one asset.

Value

A list of distributions and their corresponding AIC and BIC values.
**ged_fit**

*See Also*

- `asset_loader`

*Examples*

```r
data <- asset_loader(system.file("extdata", package = "StockDistFit"), c("AAPL", "TSLA"), "Close")
fit_multiple_dist(c("norm_fit", "cauchy_fit"), data)
```

```r
ged_fit(vec)
```

**Description**

This function fits the Generalized Error Distribution (GED) to a given data vector using the `ged_fit` function from the `fGarch` package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.

**Usage**

```r
ged_fit(vec)
```

**Arguments**

- `vec` A numeric vector of data.

**Value**

A list with the following elements:

- `params` A numeric vector of length 3 containing the fitted GED parameters: shape, scale, and location.
- `aic` The Akaike Information Criterion (AIC) for the fitted model.
- `bic` The Bayesian Information Criterion (BIC) for the fitted model.

**See Also**

- `norm_fit`, `t_fit`, `cauchy_fit`, `ghd_fit`, `hd_fit`, `sym.ghd_fit`, `sym.hd_fit`, `vg_fit`, `nig_fit`, `sym.vg_fit`, `skew.t_fit`, `skew.normal_fit`, `skew.ged_fit`

**Examples**

```r
stock_prices <- c(10, 11, 12, 13, 14, 17, 18)
returns <- diff(log(stock_prices))
ged_fit(returns)
```
ghd_fit

Fit Generalized Hyperbolic Distribution to a vector of returns/stock prices.

Description

This function fits the Generalized Hyperbolic (GH) distribution to a given data vector using the fit.ghypuv function from the ghyp package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.

Usage

ghd_fit(vec)

Arguments

vec a numeric vector containing the data to be fitted.

Value

a list containing the following elements:

par a numeric vector of length 5 containing the estimated values for the parameters of the fitted distribution: lambda (location), alpha (scale), mu (degrees of freedom), sigma (standard deviation), and gamma (skewness).

aic the Akaike information criterion (AIC) value for the fitted distribution.

bic the Bayesian information criterion (BIC) value for the fitted distribution.

See Also

norm_fit, t_fit, cauchy_fit, hd_fit, sym.ghd_fit, sym.hd_fit, vg_fit, sym.vg_fit, nig_fit, ged_fit, skew.t_fit, skew.normal_fit, skew.ged_fit

Examples

stock_prices <- c(10, 11, 12, 13, 14, 16, 24)
returns <- diff(log(stock_prices))
ghd_fit(returns)
Description

This dataset contains the daily stock prices of Alphabet Inc. (GOOG) from January 2, 2013 to April 30, 2023. The data includes the open, high, low, and close prices, as well as the volume and adjusted close price.

Usage

data("GOOG")

Format

A data frame with 2599 observations on the following 7 variables.

- Open  a numeric vector
- High  a numeric vector
- Low   a numeric vector
- Close a numeric vector
- Volume a numeric vector
- Adjusted a numeric vector
- Date  a character vector

References

Data source: Yahoo Finance

Examples

data(GOOG)
str(GOOG) ; plot(GOOG)

hd_fit

Fit Hyperbolic distribution to return/stock prices.

Description

This function fits the Hyperbolic distribution to a given data vector using the fit_hypuv function from the ghyp package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.
Usage

hd_fit(vec)

Arguments

vec a numeric vector containing the data to be fitted.

Value

a list containing the following elements:

par a numeric vector of length 4 containing the estimated values for the parameters of the fitted distribution: alpha (scale), mu (location), sigma (standard deviation), and gamma (skewness).

aic the Akaike information criterion (AIC) value for the fitted distribution.

bic the Bayesian information criterion (BIC) value for the fitted distribution.

See Also

norm_fit, sym.ghd_fit, ghd_fit, cauchy_fit, t_fit, sym.hd_fit, vg_fit, sym.vg_fit, nig_fit, ged_fit, skew.t_fit, skew.normal_fit, skew.ged_fit

Examples

stock_prices <- c(10, 11, 12, 13, 14, 15, 16)
returns <- diff(log(stock_prices))
hd_fit(returns)

monthly_return

Compute Monthly Returns of a Vector.

Description

This function takes a numeric vector of asset returns and computes monthly returns.

Usage

monthly_return(vec)

Arguments

vec a numeric vector of asset returns.

Value

A numeric vector of monthly returns.
nig_fit

Note
The input data must be an xts object with dates as rownames.

See Also
weekly_return, annual_return

Examples

# Compute monthly returns of an asset vector
require(xts)
asset_returns_xts <- xts(c(29.2, 30.0, 36.2, 30.4, 38.5, -35.6, 34.5),
                         order.by = as.Date(c("2022-05-02", "2022-06-02", "2022-07-02",
                         "2022-08-02", "2022-09-02", "2022-10-02",
                         "2022-11-02")))
monthly_return(asset_returns_xts)

nig_fit  Fit Normal Inverse Gaussian (NIG) Distribution to a vector of returns/stock prices.

Description
This function fits the Normal Inverse Gaussian (NIG) Distribution to a given data vector using the nig_fit function from the fBasics package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.

Usage
nig_fit(vec)

Arguments
vec     A numeric vector of data.

Value
A list with the following elements:

params  The estimated parameters of the NIG distribution: location, scale, skewness, and shape.
aic     The Akaike Information Criterion (AIC) for the NIG distribution fit.
bic     The Bayesian Information Criterion (BIC) for the NIG distribution fit.
**norm_fit**

**See Also**

`norm_fit, t_fit, cauchy_fit, ghd_fit, hd_fit, sym.ghd_fit, sym.hd_fit, vg_fit, sym.vg_fit, ged_fit, skew.t_fit, skew.normal_fit, skew.ged_fit`

**Examples**

```r
stock_prices <- c(10, 11, 12, 13, 14, 17, 18)
returns <- diff(log(stock_prices))
nig_fit(returns)
```

---

**Description**

This function takes a numeric vector and fits a normal distribution to it using the `fitdist` function from the `fitdistrplus` package. It returns a list with the mean and standard deviation parameters of the fitted normal distribution, as well as the AIC and BIC values of the fitted distribution.

**Usage**

```r
norm_fit(vec)
```

**Arguments**

- `vec` a numeric vector to be fitted with a normal distribution.

**Value**

A list with the following components:

- `par` a numeric vector with the estimated mean and standard deviation parameters of the fitted normal distribution.
- `aic` a numeric value representing the Akaike information criterion (AIC) of the fitted distribution.
- `bic` a numeric value representing the Bayesian information criterion (BIC) of the fitted distribution.

**See Also**

`t_fit, cauchy_fit, ghd_fit, hd_fit, sym.ghd_fit, sym.hd_fit, vg_fit, sym.vg_fit, nig_fit, ged_fit, skew.t_fit, skew.normal_fit, skew.ged_fit`
Examples

```r
# Fit a normal distribution to a vector of returns
stock_prices <- c(10, 11, 12, 13, 14, 17, 18)
returns <- diff(log(stock_prices))
norm_fit(returns)
```

**Description**

This function fits the Skewed Generalized Error Distribution to a given data vector using the `skew.ged_fit` function from the fGarch package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.

**Usage**

```r
skew.ged_fit(vec)
```

**Arguments**

- `vec` A numeric vector of data.

**Value**

A list with the following elements:

- **params** A numeric vector of length 4 containing the fitted SGED parameters: shape, scale, location, and skewness.
- **aic** The Akaike Information Criterion (AIC) for the fitted model.
- **bic** The Bayesian Information Criterion (BIC) for the fitted model.

**See Also**

- `norm_fit`, `t_fit`, `cauchy_fit`, `ghd_fit`, `hd_fit`, `sym.ghd_fit`, `sym.hd_fit`, `vg_fit`, `sym.vg_fit`, `nig_fit`, `ged_fit`, `skew.t_fit`, `skew.normal_fit`

**Examples**

```r
stock_prices <- c(10, 11, 12, 13, 14, 17, 18)
returns <- diff(log(stock_prices))
skew.ged_fit(returns)
```
**skew.normal_fit**  
*Fit Skew Normal Distribution to a vector of returns/stock prices.*

**Description**

This function fits the Skew Normal distribution to a given data vector using the `snormFit` function from the `fGarch` package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.

**Usage**

```
skew.normal_fit(vec)
```

**Arguments**

- `vec`  
a numeric vector containing the data to be fitted.

**Value**

a list containing the following elements:

- `params`  
a numeric vector of length 3 containing the estimated values for the parameters of the fitted distribution: location (mu), scale (sigma), and skewness (alpha).
- `aic`  
the Akaike information criterion (AIC) value for the fitted distribution.
- `bic`  
the Bayesian information criterion (BIC) value for the fitted distribution.

**See Also**

`norm_fit`, `t_fit`, `cauchy_fit`, `ghd_fit`, `hd_fit`, `sym.ghd_fit`, `sym.hd_fit`, `vg_fit`, `sym.vg_fit`, `nig_fit`, `ged_fit`, `skew.t_fit`, `skew.ged_fit`

**Examples**

```
stock_prices <- c(10, 11, 12, 13, 14, 17, 18)
returns <- diff(log(stock_prices))
skew.normal_fit(returns)
```
Description

This function fits the Skewed Student-t Distribution to a given data vector using the skew.t_fit function from the fGarch package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.

Usage

skew.t_fit(vec)

Arguments

vec A numeric vector of data.

Value

A list with the following elements:

params A numeric vector of length 4 containing the fitted Skewed Student-t parameters: degrees of freedom, skewness, scale, and location.

aic The Akaike Information Criterion (AIC) for the fitted model.

bic The Bayesian Information Criterion (BIC) for the fitted model.

See Also

norm_fit, t_fit, cauchy_fit, ghd_fit, hd_fit, sym.ghd_fit, sym.hd_fit, vg_fit, nig_fit, sym.vg_fit, ged_fit, skew.normal_fit, skew.ged_fit

Examples

stock_prices <- c(10, 11, 12, 13, 14, 17, 18)
returns <- diff(log(stock_prices))
skew.t_fit(returns)
sym.ghd_fit  

Fit Symmetric Generalized Hyperbolic Distribution to returns/stock prices.

Description

This function fits the Symmetric Generalized Hyperbolic (sGH) distribution to a given data vector using the fit.ghypuv function from the ghyp package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.

Usage

sym.ghd_fit(vec)

Arguments

vec  
a numeric vector containing the data to be fitted.

Value

a list containing the following elements:

- **par**  
a numeric vector of length 5 containing the estimated values for the parameters of the fitted distribution: lambda (location), alpha (scale), mu (degrees of freedom), sigma (standard deviation), and gamma (skewness).

- **aic**  
the Akaike information criterion (AIC) value for the fitted distribution.

- **bic**  
the Bayesian information criterion (BIC) value for the fitted distribution.

See Also

norm_fit, t_fit, cauchy_fit, ghd_fit, hd_fit, sym.hd_fit, vg_fit, sym.vg_fit, nig_fit, ged_fit, skew.t_fit, skew.normal_fit, skew.ged_fit

Examples

```r
stock_prices <- c(10, 11, 12, 13, 14, 16, 15)
returns <- diff(log(stock_prices))
sym.ghd_fit(returns)
```
sym.hd_fit  

**Fit a Symmetric Hyperbolic Distribution to a vector of return/stock prices.**

**Description**

This function fits a Symmetric Hyperbolic distribution to a data vector using the `fit.hypuv` function from the `ghyp` package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.

**Usage**

```r
sym.hd_fit(vec)
```

**Arguments**

- `vec` a numeric vector containing the symmetric data to be fitted.

**Value**

A list containing the following elements:

- `par` a numeric vector of length 4 containing the estimated values for the parameters of the fitted distribution: alpha (scale), mu (degrees of freedom), sigma (standard deviation), and gamma (skewness).
- `aic` the Akaike information criterion (AIC) value for the fitted distribution.
- `bic` the Bayesian information criterion (BIC) value for the fitted distribution.

**See Also**

- `norm_fit`, `t_fit`, `cauchy_fit`, `ghd_fit`, `hd_fit`, `sym.ghd_fit`, `vg_fit`, `sym.vg_fit`, `nig_fit`, `ged_fit`, `skew.t_fit`, `skew.normal_fit`, `skew.ged_fit`

**Examples**

```r
stock_prices <- c(10, 11, 12, 13, 14, 20, 21)
returns <- diff(log(stock_prices))
sym.hd_fit(returns)
```
Symmetric Variance Gamma Distribution to a vector of returns/stock prices.

Description

This function fits the Symmetric Variance Gamma (sVG) distribution to a given data vector using the fit.VGuv function from the ghyp package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.

Usage

```r
sym.vg_fit(vec)
```

Arguments

- `vec`: a numeric vector containing the data to be fitted.

Value

A list containing the following elements:

- `par`: a numeric vector of length 4 containing the estimated values for the parameters of the fitted distribution: lambda (scale), mu (location), sigma (volatility), and gamma (skewness).
- `aic`: the Akaike information criterion (AIC) value for the fitted distribution.
- `bic`: the Bayesian information criterion (BIC) value for the fitted distribution.

See Also

`norm_fit`, `t_fit`, `cauchy_fit`, `ghd_fit`, `hd_fit`, `sym.ghd_fit`, `sym.hd_fit`, `vg_fit`, `nig_fit`, `ged_fit`, `skew.t_fit`, `skew.normal_fit`, `skew.ged_fit`

Examples

```r
stock_prices <- c(10, 11, 12, 13, 14, 17, 18)
returns <- diff(log(stock_prices))
sym.vg_fit(returns)
```


TSLA

*Tesla Inc. Stock Prices Dataset*

**Description**

This dataset contains the daily stock prices of Tesla, Inc. (TSLA) from January 2, 2013 to May 6, 2023. The data includes the open, high, low, and close prices, as well as the volume and adjusted close price.

**Usage**

```r
data("TSLA")
```

**Format**

A data frame with 2599 observations on the following 7 variables.

- **Open** a numeric vector
- **High** a numeric vector
- **Low** a numeric vector
- **Close** a numeric vector
- **Volume** a numeric vector
- **Adjusted** a numeric vector
- **Date** a character vector

**References**

Data source: Yahoo Finance

**Examples**

```r
data(TSLA)
str(TSLA) ; plot(TSLA)
```

---

**t_fit**

*Fit Student’s t Distribution to a vector of returns/stock prices.*

**Description**

This function fits the Student’s t distribution to a given data vector using the *fit.tuv* function from the *ghyp* package. It returns the estimated parameters along with the AIC and BIC values for the fitted distribution.
vg_fit

Usage

t_fit(vec)

Arguments

vec a numeric vector containing the data to be fitted.

Value

a list containing the following elements:

par a numeric vector of length 5 containing the estimated values for the parameters of the fitted
distribution: lambda (location), alpha (scale), mu (degrees of freedom), sigma (standard devi-
ation), and gamma (skewness).

aic the Akaike information criterion (AIC) value for the fitted distribution.
bic the Bayesian information criterion (BIC) value for the fitted distribution.

See Also

norm_fit, cauchy_fit, ghd_fit, hd_fit, sym.ghd_fit, sym.hd_fit, vg_fit, sym.vg_fit, nig_fit,
ged_fit, skew.t_fit, skew.normal_fit, skew.ged_fit

Examples

stock_prices <- c(10, 11, 12, 13, 14, 17, 18)
returns <- diff(log(stock_prices))
t_fit(returns)

---

vg_fit  

Fit Variance Gamma Distribution to a vector of return/stock prices.

Description

This function fits the Variance Gamma (VG) distribution to a given data vector using the fit.VGuv
function from the ghyp package. It returns the estimated parameters along with the AIC and BIC
values for the fitted distribution.

Usage

vg_fit(vec)

Arguments

vec a numeric vector containing the data to be fitted.
weekly_return

Value

A list containing the following elements:

- **par**: A numeric vector of length 4 containing the estimated values for the parameters of the fitted distribution: lambda (location), mu (scale), sigma (shape), and gamma (skewness).
- **aic**: The Akaike information criterion (AIC) value for the fitted distribution.
- **bic**: The Bayesian information criterion (BIC) value for the fitted distribution.

See Also

- `norm_fit`, `t_fit`, `cauchy_fit`, `ghd_fit`, `hd_fit`, `sym.ghd_fit`, `sym.hd_fit`, `sym.vg_fit`, `nig_fit`, `ged_fit`, `skew.t_fit`, `skew.normal_fit`, `skew.ged_fit`

Examples

```r
stock_prices <- c(10, 11, 12, 13, 14, 15, 17)
returns <- diff(log(stock_prices))
vg_fit(returns)
```

weekly_return

Compute Weekly Returns of a Vector.

Description

This function takes a numeric vector of asset returns and computes weekly returns.

Usage

`weekly_return(vec)`

Arguments

- **vec**: A numeric vector of asset returns.

Value

A numeric vector of weekly returns.

Note

The input data must be an xts object with dates as rownames.

See Also

- `monthly_return`, `annual_return`
Examples

# Compute weekly returns of an asset vector
require(xts)
asset_returns_xts <- xts(c(29.2, 30.0, 36.2, 30.4, 38.5, -35.6, 34.5),
                         order.by = as.Date(c("2022-05-01", "2022-05-08", "2022-05-15",
                                             "2022-06-12")))

weekly_return(asset_returns_xts)
Index

* datasets
  AAPL, 2
  AMZN, 3
  GOOG, 11
  TSLA, 21

AAPL, 2
AMZN, 3
annual_return, 4, 7, 13, 23
asset_loader, 4, 9
best_dist, 5
cauhcy_fit, 6, 9, 10, 12, 14–20, 22, 23
data.cumret, 7
fit_multiple_dist, 8
ged_fit, 6, 9, 10, 12, 14–20, 22, 23
ghd_fit, 6, 9, 10, 12, 14–20, 22, 23
GOOG, 11
hd_fit, 6, 9, 10, 11, 14–20, 22, 23
monthly_return, 4, 7, 12, 23
nig_fit, 6, 9, 10, 12, 13, 14–20, 22, 23
norm_fit, 6, 9, 10, 12, 14, 15–20, 22, 23
skew.ged_fit, 6, 9, 10, 12, 14, 15, 16–20, 22, 23
skew.normal_fit, 6, 9, 10, 12, 14, 15, 16, 17–20, 22, 23
skew.t_fit, 6, 9, 10, 12, 14–16, 17, 18–20, 22, 23
sym.ghd_fit, 6, 9, 10, 12, 14–17, 18, 19, 20, 22, 23
sym.hd_fit, 6, 9, 10, 12, 14–18, 19, 20, 22, 23
sym.vg_fit, 6, 9, 10, 12, 14–19, 20, 22, 23
t_fit, 6, 9, 10, 12, 14–20, 21, 23

TSLA, 21
vg_fit, 6, 9, 10, 12, 14–20, 22, 22
weekly_return, 4, 7, 13, 23