

Package ‘epo’

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Type Package

Title Enhanced Portfolio Optimization (EPO)

Version 0.1.0

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Description Implements the Enhanced Portfolio Optimization (EPO) method as described in Pedersen, Babu and Levine (2021) <[doi:10.2139/ssrn.3530390](https://doi.org/10.2139/ssrn.3530390)>.

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URL <https://github.com/Reckziegel/epo>,
<https://reckziegel.github.io/epo/>

BugReports <https://github.com/Reckziegel/epo/issues>

Encoding UTF-8

RoxygenNote 7.2.3

Imports assertthat (>= 0.2.1), dplyr (>= 1.1.2), rlang (>= 1.1.1), xts (>= 0.13.1)

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

NeedsCompilation no

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Repository CRAN

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Description

Computes the optimal portfolio allocation using the EPO method.

Usage

```
epo(  
  x,  
  signal,  
  lambda,  
  method = c("simple", "anchored"),  
  w,  
  anchor = NULL,  
  normalize = TRUE,  
  endogenous = TRUE  
)
```

Default S3 method:

```
epo(  
  x,  
  signal,  
  lambda,  
  method = c("simple", "anchored"),  
  w,  
  anchor = NULL,  
  normalize = TRUE,  
  endogenous = TRUE  
)
```

S3 method for class 'tbl'

```
epo(  
  x,  
  signal,  
  lambda,  
  method = c("simple", "anchored"),  
  w,  
  anchor = NULL,  
  normalize = TRUE,  
  endogenous = TRUE  
)
```

S3 method for class 'xts'

```
epo(  
  x,
```

```

    signal,
    lambda,
    method = c("simple", "anchored"),
    w,
    anchor = NULL,
    normalize = TRUE,
    endogenous = TRUE
  )

## S3 method for class 'matrix'
epo(
  x,
  signal,
  lambda,
  method = c("simple", "anchored"),
  w,
  anchor = NULL,
  normalize = TRUE,
  endogenous = TRUE
)

```

Arguments

x	A data-set with asset returns. It should be a tibble, a xts or a matrix.
signal	A double vector with the investor's belief's (signals, forecasts).
lambda	A double with the investor's risk-aversion preference.
method	A character. One of: "simple" or "anchored".
w	A double between 0 and 1. The shrinkage level increases from 0 to 1.
anchor	A double vector with the anchor (benchmark) in which the allocation should not deviate too much from. Only used when method = "anchored".
normalize	A boolean indicating whether the allocation should be normalized to sum 1 (full-investment constraint). The default is normalize = TRUE.
endogenous	A boolean indicating whether the risk-aversion parameter should be considered endogenous (only used when method = "anchored"). The default is endogenous = TRUE.

Value

The optimal allocation vector.

Examples

```

x <- diff(log(EuStockMarkets)) # stock returns
s <- colMeans(x) # it could be any signal

```

```

#####
### Simple EPO ###
#####

```

```
# Traditional Mean-Variance Analysis
epo(x = x, signal = s, lambda = 10, method = "simple", w = 0)

# 100% Shrinkage
epo(x = x, signal = s, lambda = 10, method = "simple", w = 1)

# 50% Classical MVO and 50% Shrinkage
epo(x = x, signal = s, lambda = 10, method = "simple", w = 0.5)

#####
### Anchored EPO ###
#####

benchmark <- rep(0.25, 4) # 1/N Portfolio

# Traditional Mean-Variance Analysis
epo(x = x, signal = s, lambda = 10, method = "anchored", w = 0.0, anchor = benchmark)

# 100% on the Anchor portfolio
epo(x = x, signal = s, lambda = 10, method = "anchored", w = 1.0, anchor = benchmark)

# Somewhere between the two worlds
epo(x = x, signal = s, lambda = 10, method = "anchored", w = 0.5, anchor = benchmark)
```

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