R R

R

http://127.0.0.1:18297/library/PortfolioAnalytics/doc/custom_moments_objectives.R

http://127.0.0.1:18297

```r
library(PortfolioAnalytics)
```

```
## Loading required package: zoo

##
## Attaching package: 'zoo'

## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric

## Loading required package: xts

## Loading required package: foreach

## Loading required package: PerformanceAnalytics

##
## Attaching package: 'PerformanceAnalytics'

## The following object is masked from 'package:graphics':
##
##     legend
```

```r
library(DEoptim)
```

```
## Loading required package: parallel

##
## DEoptim package
## Differential Evolution algorithm in R
## Authors: D. Ardia, K. Mullen, B. Peterson and J. Ulrich
```

```r
library(PerformanceAnalytics )
```

```r
data(edhec)
head(edhec)
```

```
##            Convertible Arbitrage CTA Global Distressed Securities
## 1997-01-31                0.0119     0.0393                0.0178
## 1997-02-28                0.0123     0.0298                0.0122
## 1997-03-31                0.0078    -0.0021               -0.0012
## 1997-04-30                0.0086    -0.0170                0.0030
## 1997-05-31                0.0156    -0.0015                0.0233
## 1997-06-30                0.0212     0.0085                0.0217
##            Emerging Markets Equity Market Neutral Event Driven
## 1997-01-31           0.0791                0.0189       0.0213
## 1997-02-28           0.0525                0.0101       0.0084
## 1997-03-31          -0.0120                0.0016      -0.0023
## 1997-04-30           0.0119                0.0119      -0.0005
## 1997-05-31           0.0315                0.0189       0.0346
```

```
## 1997-06-30           0.0581                0.0165       0.0258
##            Fixed Income Arbitrage Global Macro Long/Short Equity
## 1997-01-31                 0.0191       0.0573             0.0281
## 1997-02-28                 0.0122       0.0175            -0.0006
## 1997-03-31                 0.0109      -0.0119            -0.0084
## 1997-04-30                 0.0130       0.0172             0.0084
## 1997-05-31                 0.0118       0.0108             0.0394
## 1997-06-30                 0.0108       0.0218             0.0223
##            Merger Arbitrage Relative Value Short Selling Funds of Funds
## 1997-01-31           0.0150         0.0180       -0.0166         0.0317
## 1997-02-28           0.0034         0.0118        0.0426         0.0106
## 1997-03-31           0.0060         0.0010        0.0778        -0.0077
## 1997-04-30          -0.0001         0.0122       -0.0129         0.0009
## 1997-05-31           0.0197         0.0173       -0.0737         0.0275
## 1997-06-30           0.0231         0.0198       -0.0065         0.0225
```

```r
R <- edhec[, 1:4]
colnames(R) <- c("CA", "CTAG", "DS", "EM")
head(R, 5)
```

```
##                CA    CTAG      DS      EM
## 1997-01-31 0.0119  0.0393  0.0178  0.0791
## 1997-02-28 0.0123  0.0298  0.0122  0.0525
## 1997-03-31 0.0078 -0.0021 -0.0012 -0.0120
## 1997-04-30 0.0086 -0.0170  0.0030  0.0119
## 1997-05-31 0.0156 -0.0015  0.0233  0.0315
```

```r
funds <- colnames(R)
funds
```

```
## [1] "CA"   "CTAG" "DS"   "EM"
```

```r
init.portf <- portfolio.spec(assets=funds)
init.portf <- add.constraint(portfolio=init.portf, type="full_investment")
init.portf <- add.constraint(portfolio=init.portf, type="long_only")
SD.portf <- add.objective(portfolio=init.portf, type="risk", name="StdDev")
ES.portf <- add.objective(portfolio=init.portf, type="risk", name="ES")
sd.moments <- set.portfolio.moments(R, SD.portf)
names(sd.moments)
```

```
## [1] "mu"    "sigma"
```

```r
es.moments <- set.portfolio.moments(R, ES.portf)
names(es.moments)
```

```
## [1] "mu"    "sigma" "m3"    "m4"
```

```r
sigma.robust <- function(R){
  require(MASS)
  out <- list()
  set.seed(1234)
  out$sigma <- cov.rob(R, method="mcd")$cov
  return(out)
}
```

```
opt.sd <- optimize.portfolio(R, SD.portf,
                             optimize_method="ROI",
                             momentFUN="sigma.robust")
```

```
opt.sd
```

```
Error: "package:ROI" %in% search() || requireNamespace("ROI", quietly = TRUE) is not TRUE
```

`search()` `.Rproj` load packages `ROI` R `R version 3.3.3` R

```r
sessionInfo()
```

```
## R version 3.3.3 (2017-03-06)
## Platform: x86_64-apple-darwin13.4.0 (64-bit)
## Running under: macOS Sierra 10.12.6
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] parallel  stats     graphics  grDevices utils     datasets  methods
## [8] base
##
## other attached packages:
## [1] DEoptim_2.2-4                 PortfolioAnalytics_1.0.3636
## [3] PerformanceAnalytics_1.4.3541 foreach_1.4.3
## [5] xts_0.10-1                    zoo_1.8-1
##
## loaded via a namespace (and not attached):
##  [1] Rcpp_0.12.14     codetools_0.2-15 lattice_0.20-34  digest_0.6.13
##  [5] rprojroot_1.2    grid_3.3.3       backports_1.1.0  magrittr_1.5
##  [9] evaluate_0.10.1  stringi_1.1.6    rmarkdown_1.8    iterators_1.0.8
## [13] tools_3.3.3      stringr_1.2.0    yaml_2.1.16      htmltools_0.3.6
## [17] knitr_1.20
```