QPM_ES

Erik_senn

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EUROSTOXX50

VSTOXX
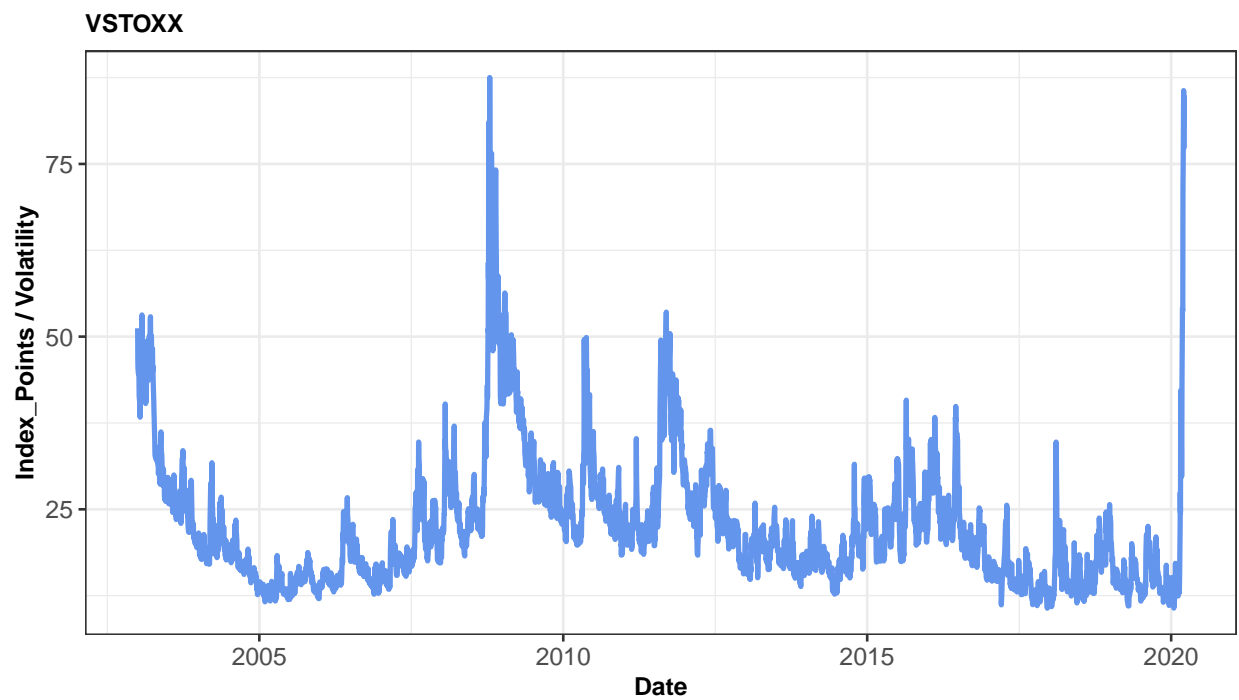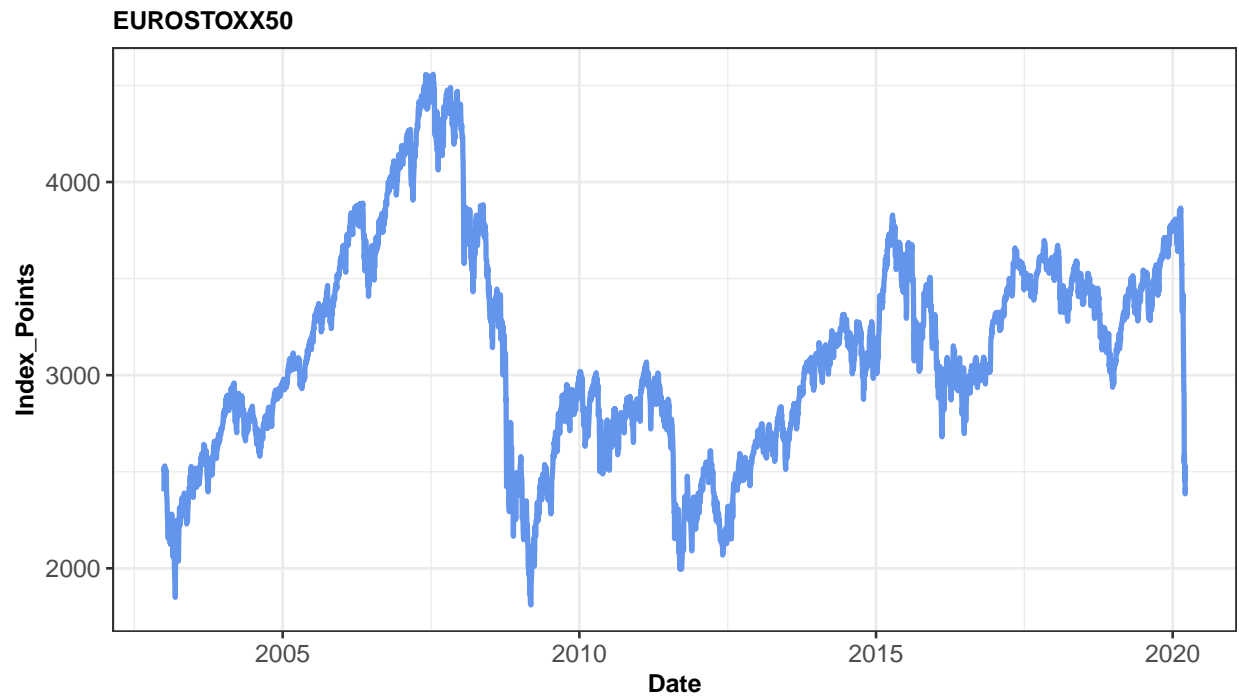
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## Warning: Removed 2 rows containing missing values (geom_path).
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## Warning: Removed 2 rows containing missing values (geom_path).
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EUROSTOXX50_and_VSTOXX

3 Realized vs implied volatility
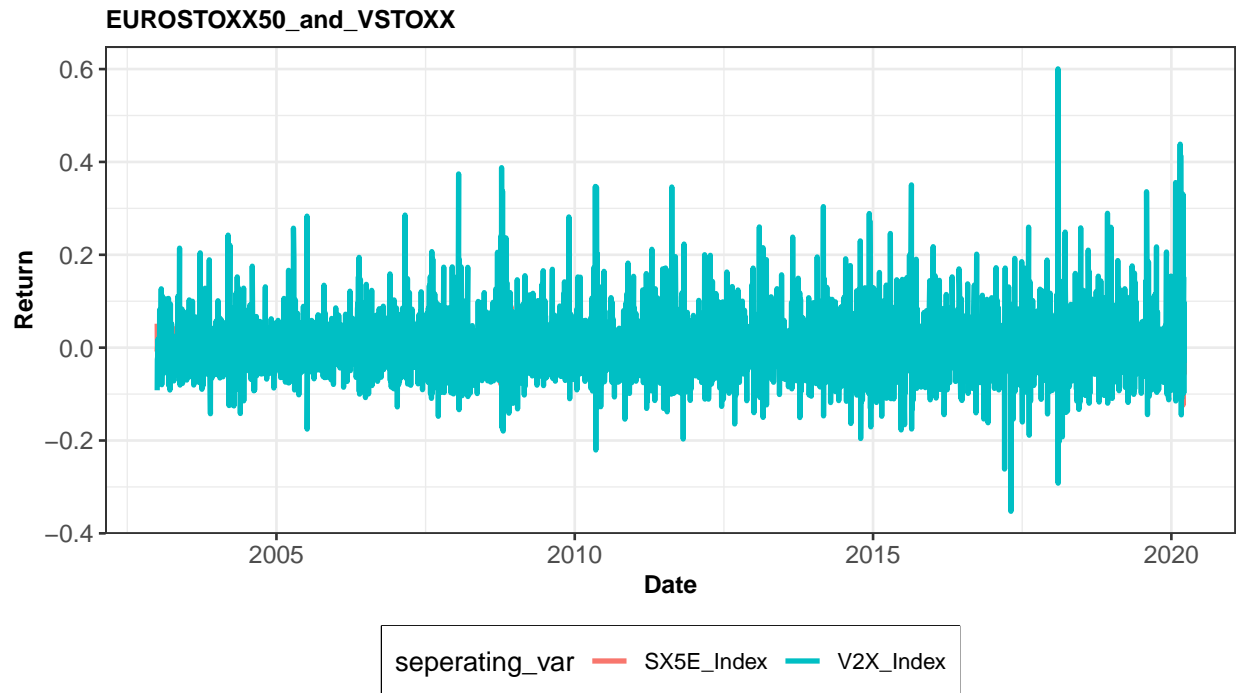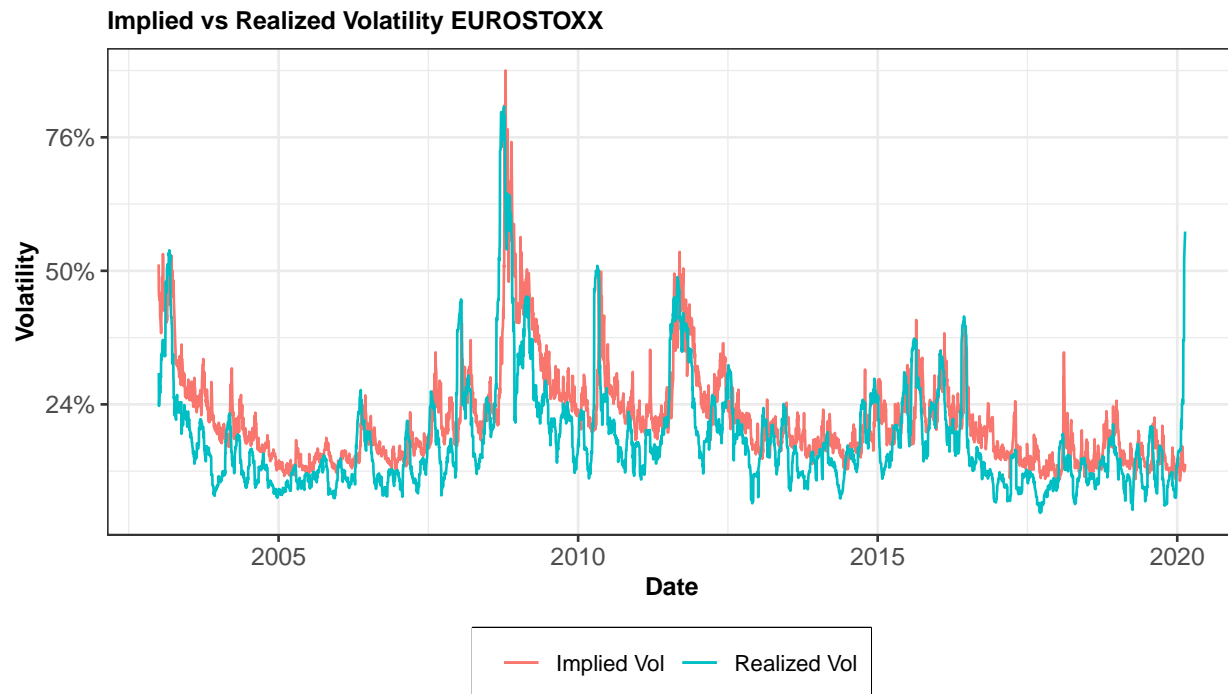
```
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```
## Warning: Removed 1 rows containing missing values (geom_path).
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Implied vs Realized Volatility EUROSTOXX


```
## [1] "Correlation implied and realized VOLA"

## [1] 0.753316

##       Min.   1st Qu.    Median      Mean   3rd Qu.      Max.      NA's
## -0.124014 -0.005879  0.000070  0.000093  0.006377  0.110018         1

##       Min.   1st Qu.    Median      Mean   3rd Qu.      Max.      NA's
## -0.35255  -0.03583  -0.00320   0.00211   0.03008   0.60048         1

## [1] "Annual mean return"

## [1] 0.0233874 0.5314699

## [1] "Variance-Covariance-Matrix"

##              lret_S       lret_V
## lret_S  0.000182218 -0.00062542
## lret_V -0.000625420  0.00393782

## [1] "Correlation-Matrix"

##            lret_S     lret_V
## lret_S   1.000000 -0.738327
## lret_V  -0.738327  1.000000

## [1] "Value at Risk"
```
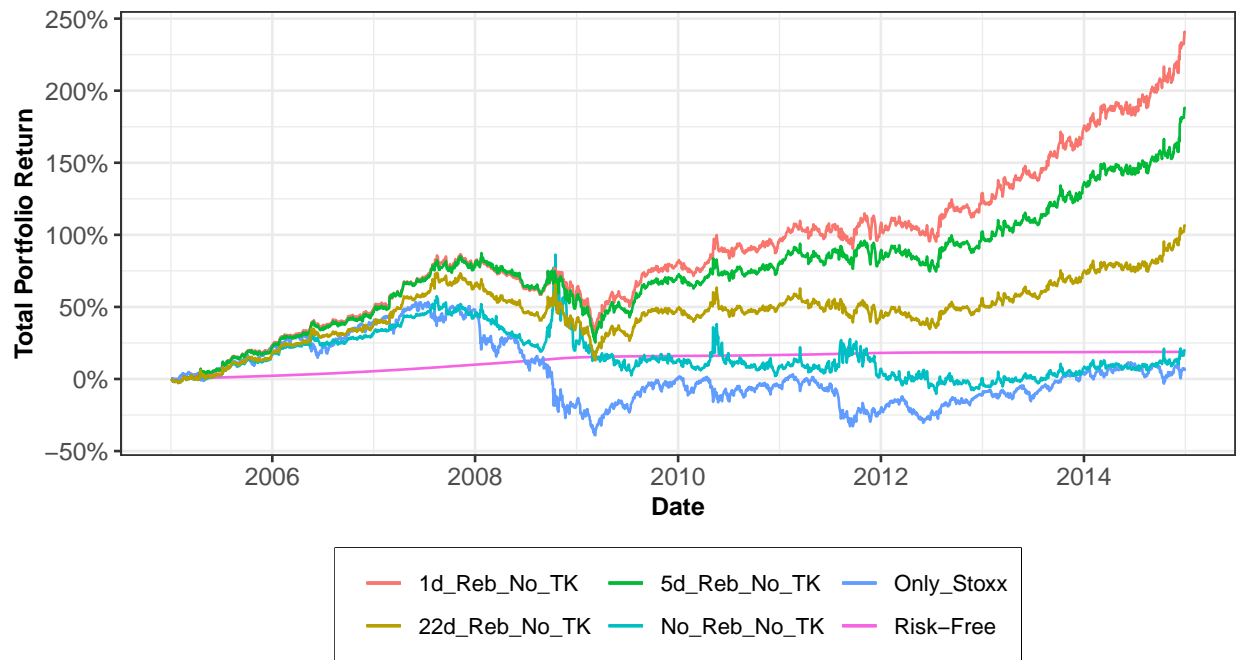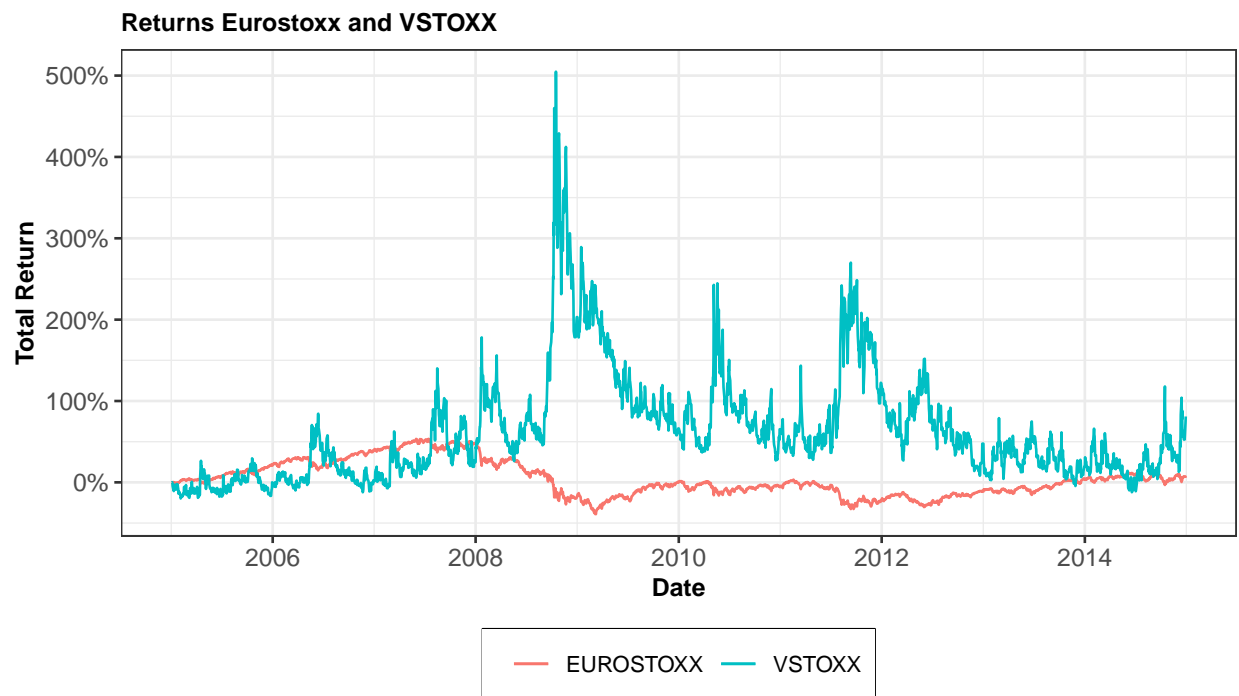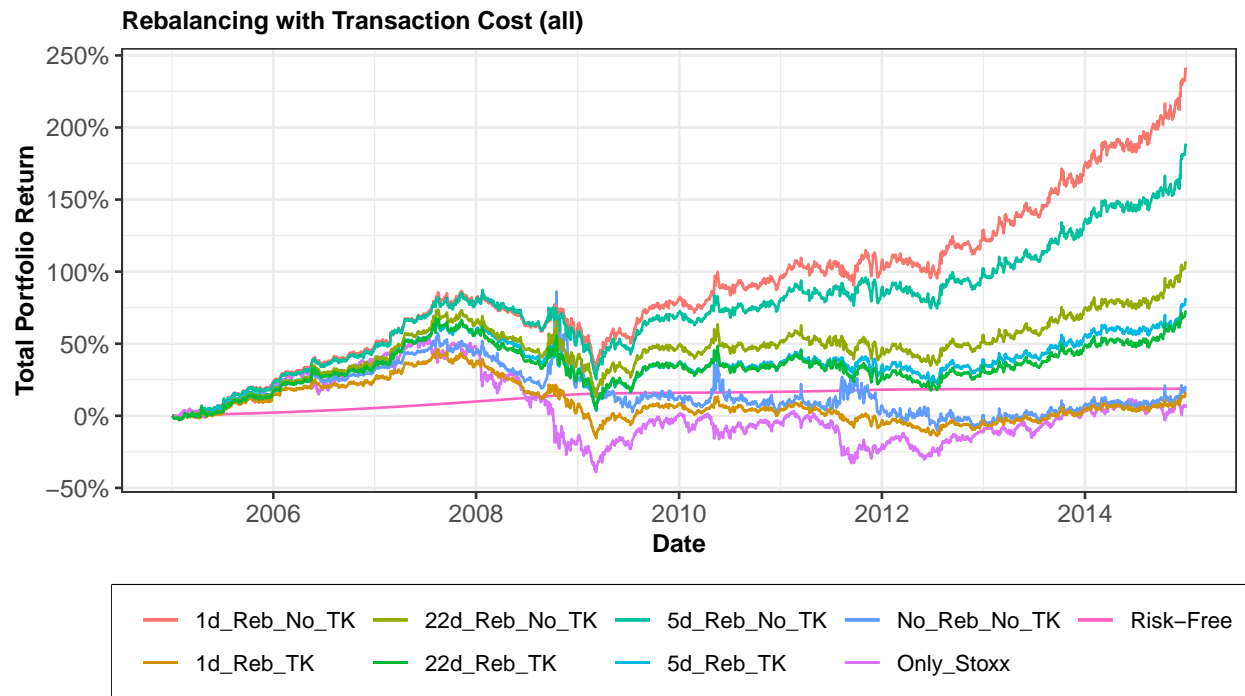
```
##     ret_S    ret_V
## 0.331538 1.370342
```

```
## [1] "Expected Shortfall"
```

```
##     ret_S    ret_V
## 0.518589 1.837054
```

4 Trading Strategys in Eurostoxx (later MSCI-World)

4.1 Correlation Portfolio

```
## \begin{table}[ht]
## \centering
## \begin{tabular}{rllllllrrrrrrrrrr}
##   \hline
##  & name\_strategy & startvalue\_pf & transaction\_cost\_share & rebalance\_intervall\_days & share\_s
##   \hline
## 1 & Only\_Stoxx & 100 & 0 & 2607 & 1 & 0.06 & 0.01 & 0.23 & -0.05 & 0.35 & 0.54 & 0.00 & -0.11 & -0.0
##   2 & No\_Reb\_No\_TK & 100 & 0 & 2607 & 0.8 & 0.21 & 0.02 & 0.23 & 0.01 & 0.30 & 0.50 & 0.00 & 0.02
##   3 & 1d\_Reb\_No\_TK & 100 & 0 & 1 & 0.8 & 2.40 & 0.23 & 0.13 & 1.39 & 0.17 & 0.25 & 0.00 & 1.86 & 0
##   4 & 1d\_Reb\_TK & 100 & 0.025 & 1 & 0.8 & 0.16 & 0.02 & 0.13 & -0.02 & 0.19 & 0.26 & 117.80 & -0.03
##   5 & 5d\_Reb\_No\_TK & 100 & 0 & 5 & 0.8 & 1.87 & 0.18 & 0.13 & 1.05 & 0.18 & 0.26 & 0.00 & 1.42 & 0
##   6 & 5d\_Reb\_TK & 100 & 0.025 & 5 & 0.8 & 0.81 & 0.08 & 0.13 & 0.39 & 0.18 & 0.27 & 64.59 & 0.52 &
##   7 & 22d\_Reb\_No\_TK & 100 & 0 & 22 & 0.8 & 1.06 & 0.10 & 0.14 & 0.51 & 0.19 & 0.29 & 0.00 & 0.73 &
##   8 & 22d\_Reb\_TK & 100 & 0.025 & 22 & 0.8 & 0.72 & 0.07 & 0.14 & 0.31 & 0.20 & 0.29 & 24.86 & 0.45
##    \hline
## \end{tabular}
## \caption{latex}
## \end{table}
```

No Rebalancing (all)

Rebalancing (all)

Rebalancing with Transaction Cost (all)

Returns Eurostoxx and VSTOXX


```
## [1] "Annualized Variance Daily Returns EUROSTOXX"

## [1] 0.227283

## [1] "Annualized Variance Daily Returns VSTOXX"
```
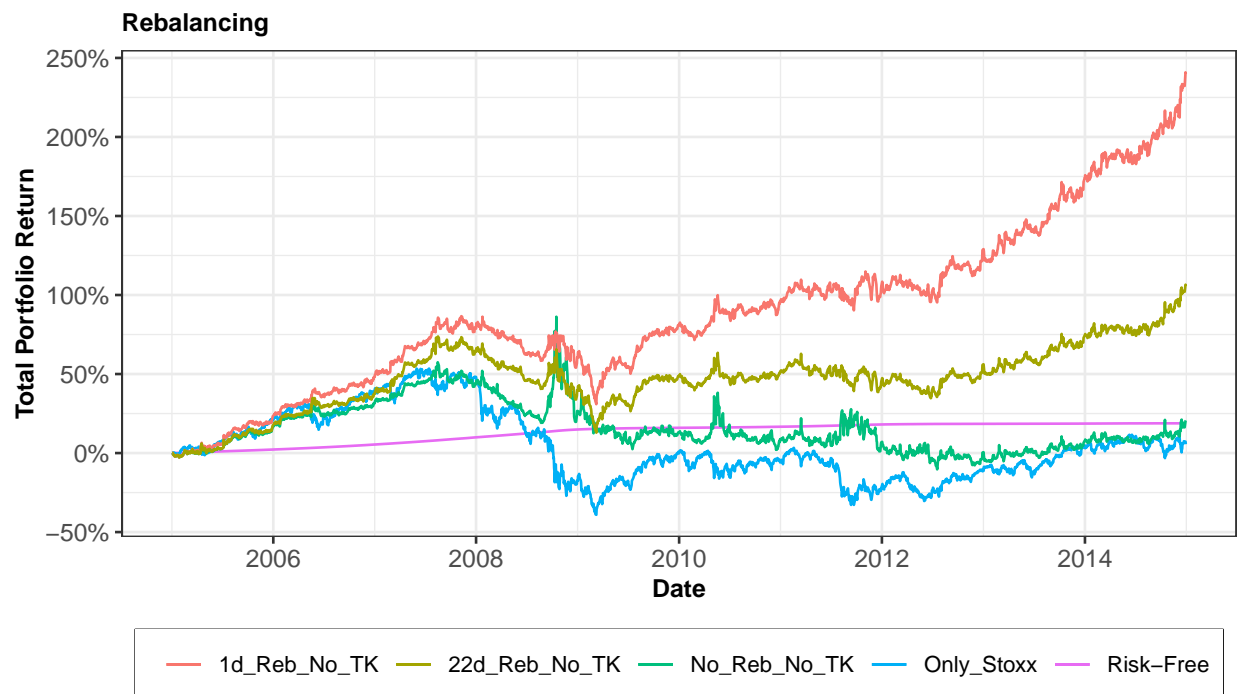
```
## [1] 0.969965

## [1] "Negative Correlation of Daily Returns VSTOXX and EUROSTOXX"

## [1] -0.763203
```
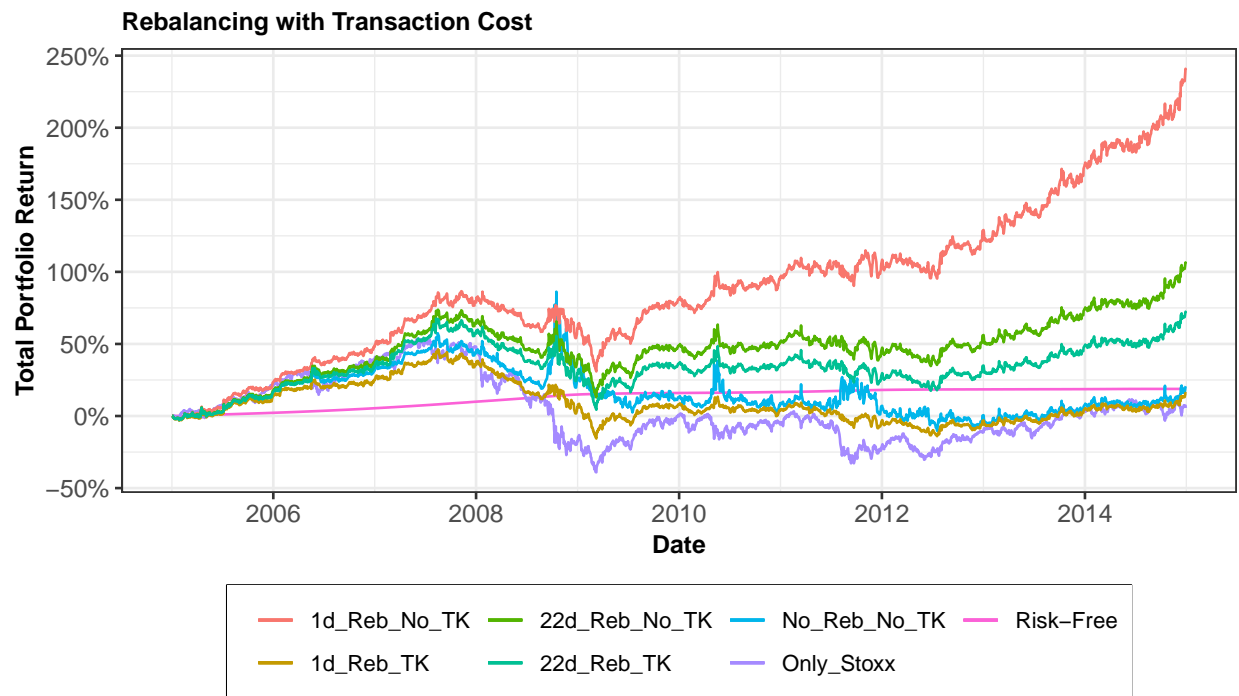
No Rebalancing

Rebalancing

Rebalancing with Transaction Cost

4.2 Delta-Hedging (not done)

- calc theoretical profit
- calc relalized profit
- use futures instead of index