QPM_ES

Erik_senn

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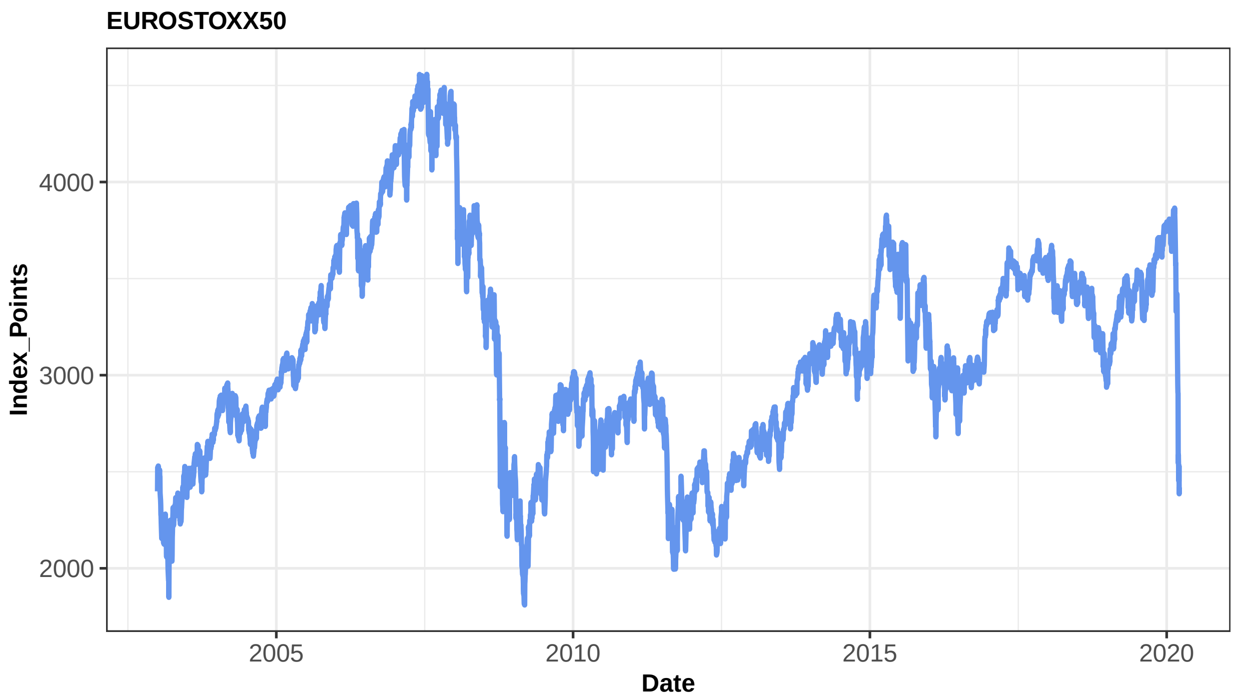
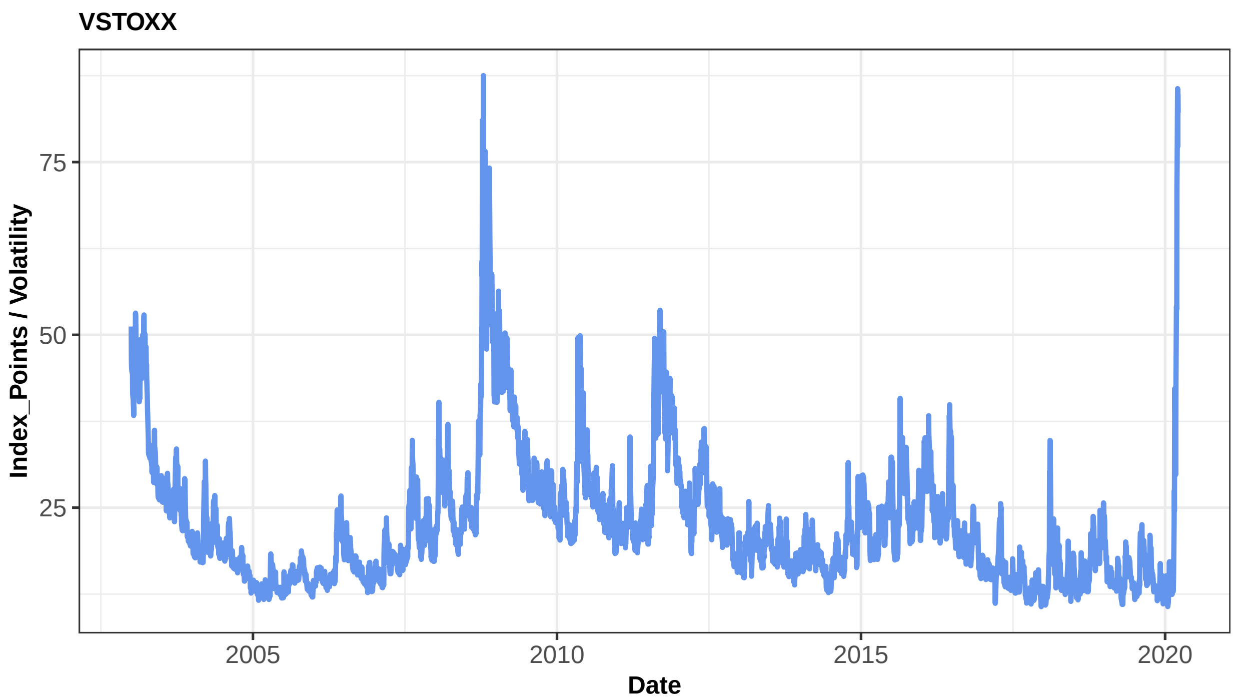
1 Data Import

2 Descriptive Plots





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

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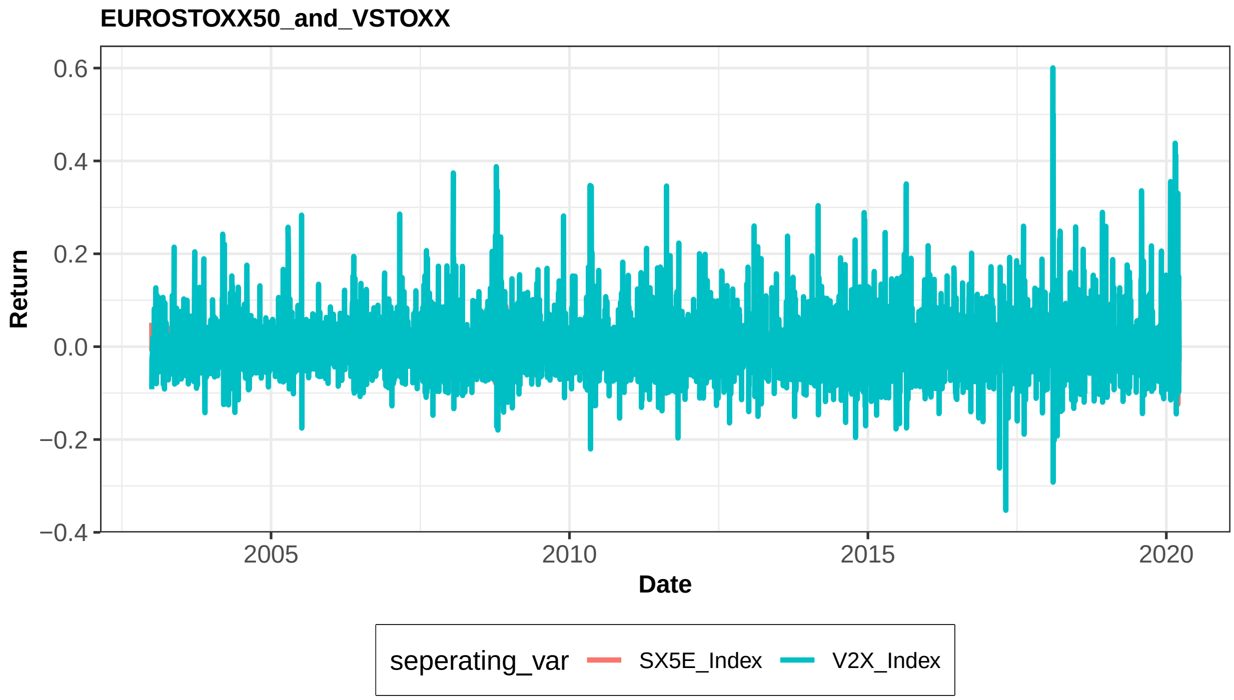

2.1 relalized vs implied vol

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## Warning: Removed 1 rows containing missing values (geom_path).

## Warning: Removed 1 rows containing missing values (geom_path).
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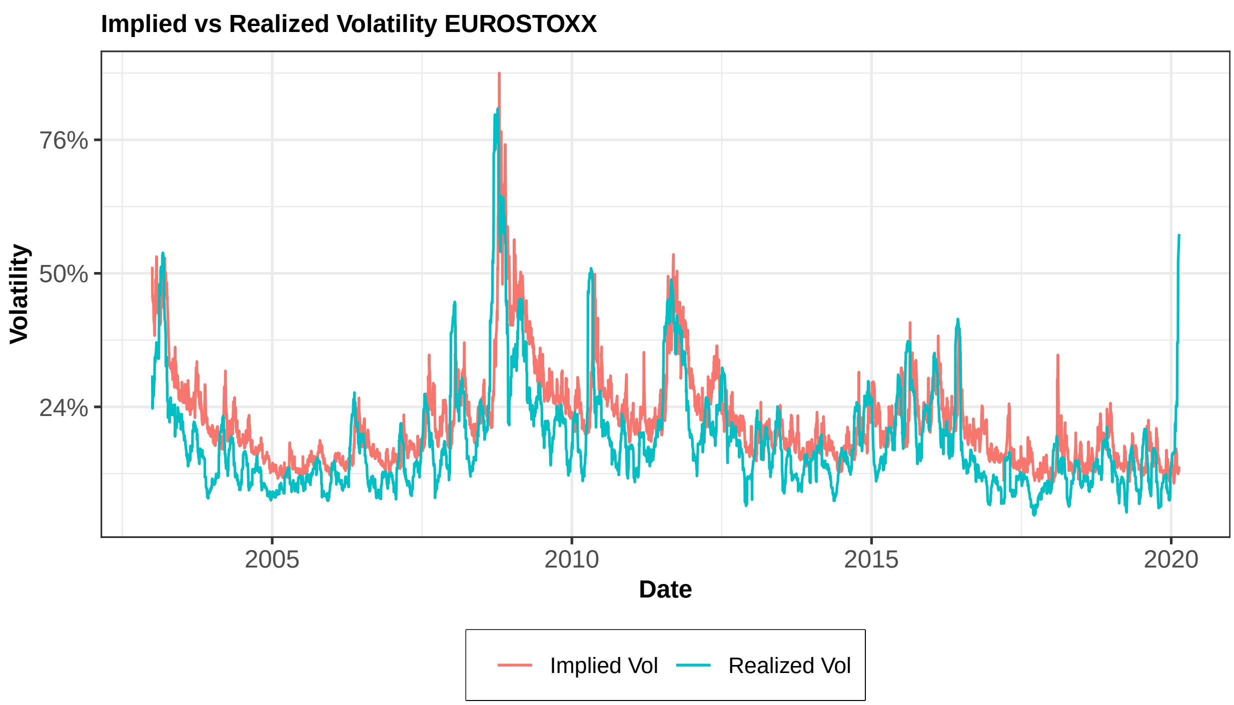
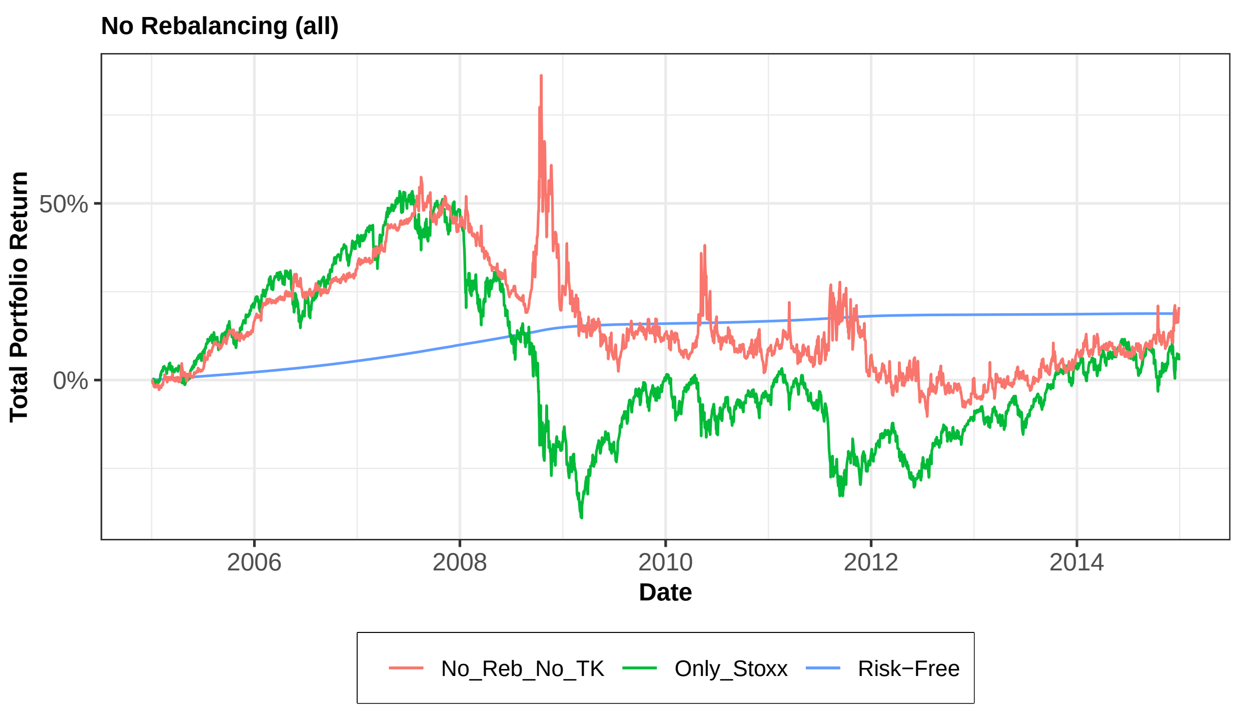


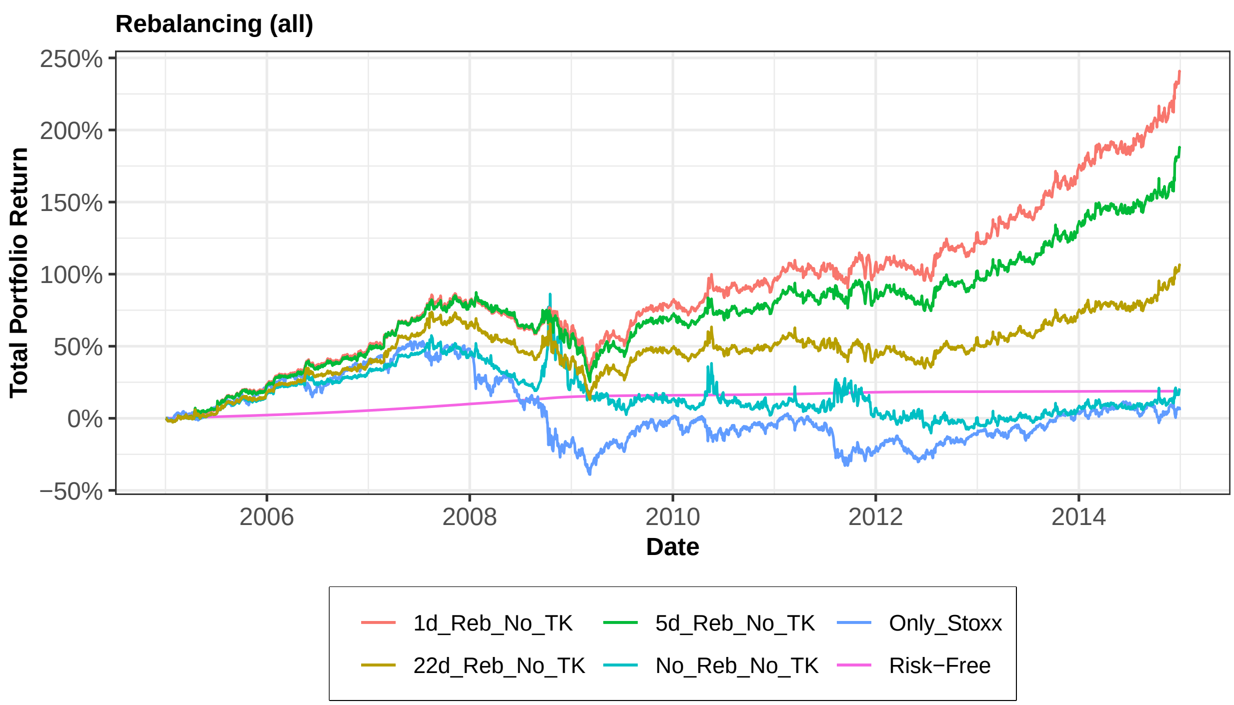

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.      NA's
## -0.124014 -0.005879  0.000070  0.000093  0.006377  0.110018         1

##     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
```

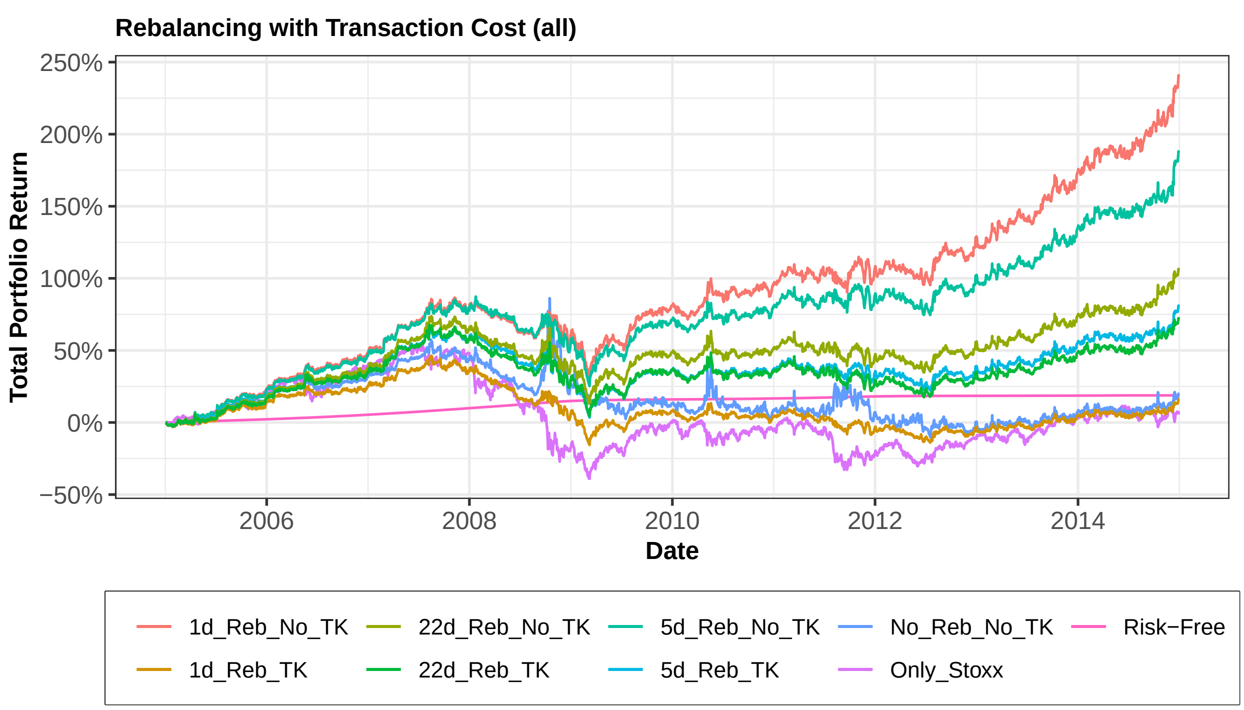
3 Trading Strategys in Eurostoxx (later MSCI-World)

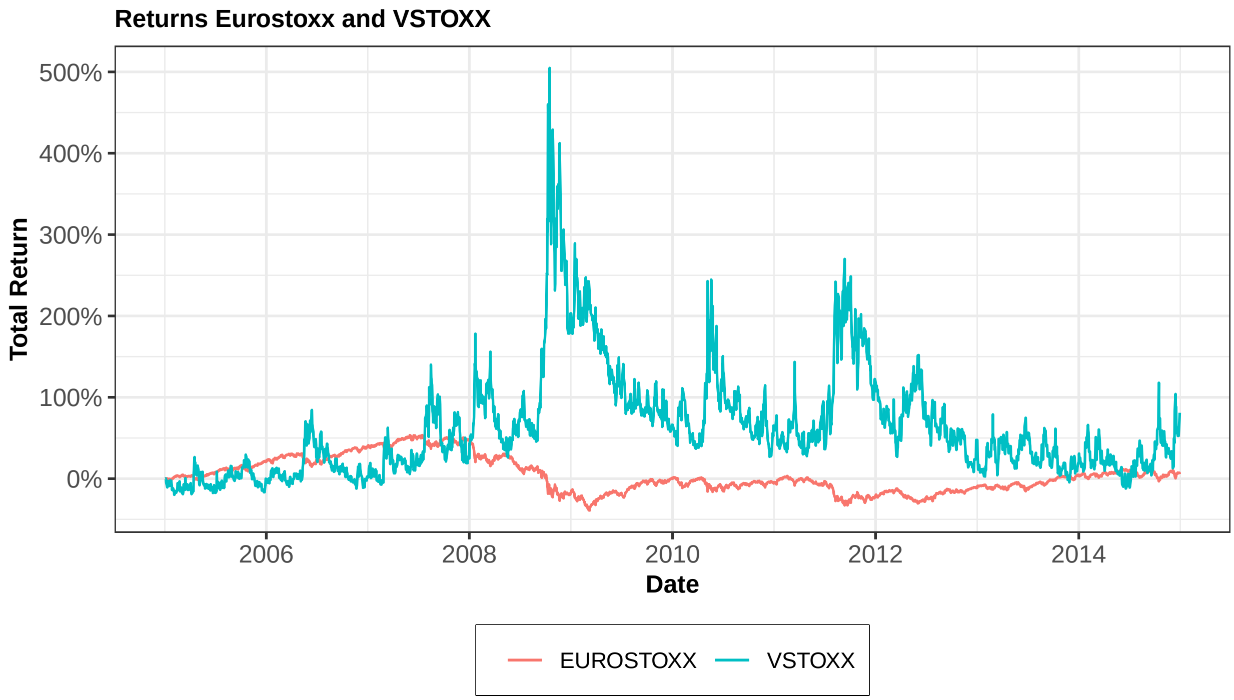
3.1 Correlation Portfolio

name_strategy	startvalue_pf	transaction_cost_share	rebalance_intervall_days	share_sx5e	total_return
Only_Stoxx	100	0	2607	1	0.055868
No_Reb_No_TK	100	0	2607	0.8	0.206652
1d_Reb_No_TK	100	0	1	0.8	2.401029
1d_Reb_TK	100	0.025	1	0.8	0.156249
5d_Reb_No_TK	100	0	5	0.8	1.874410
5d_Reb_TK	100	0.025	5	0.8	0.806714
22d_Reb_No_TK	100	0	22	0.8	1.059138
22d_Reb_TK	100	0.025	22	0.8	0.718325

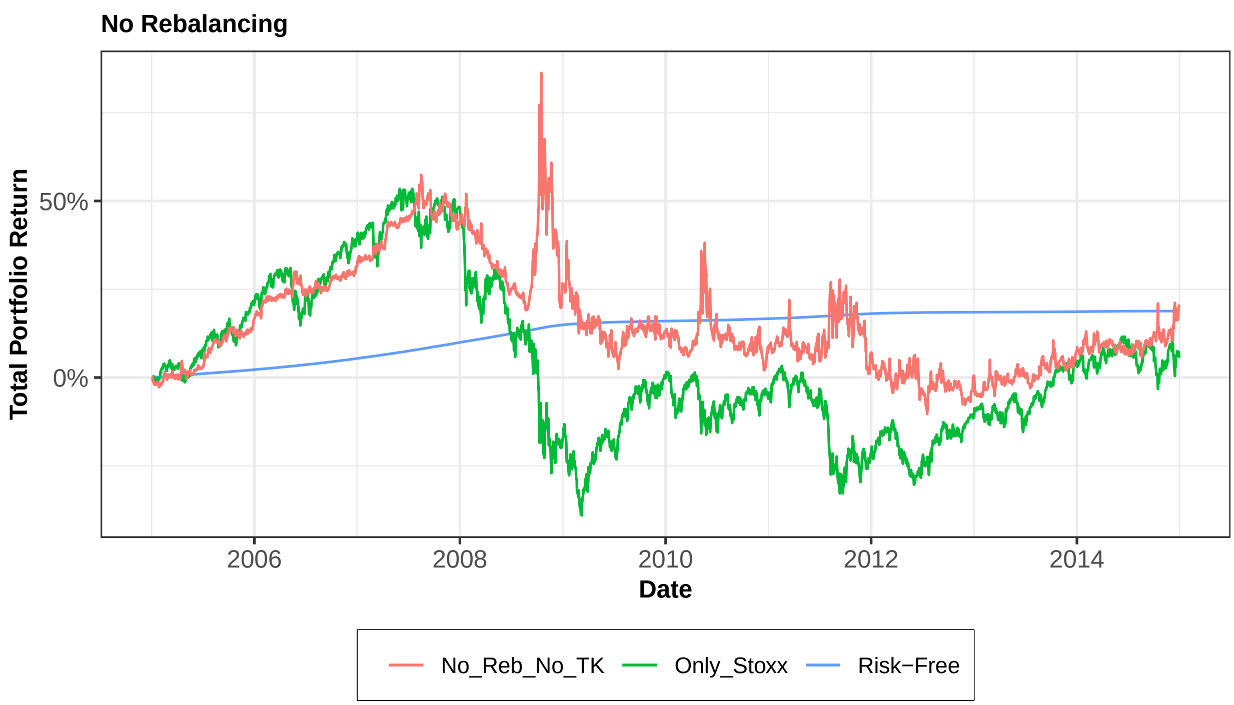


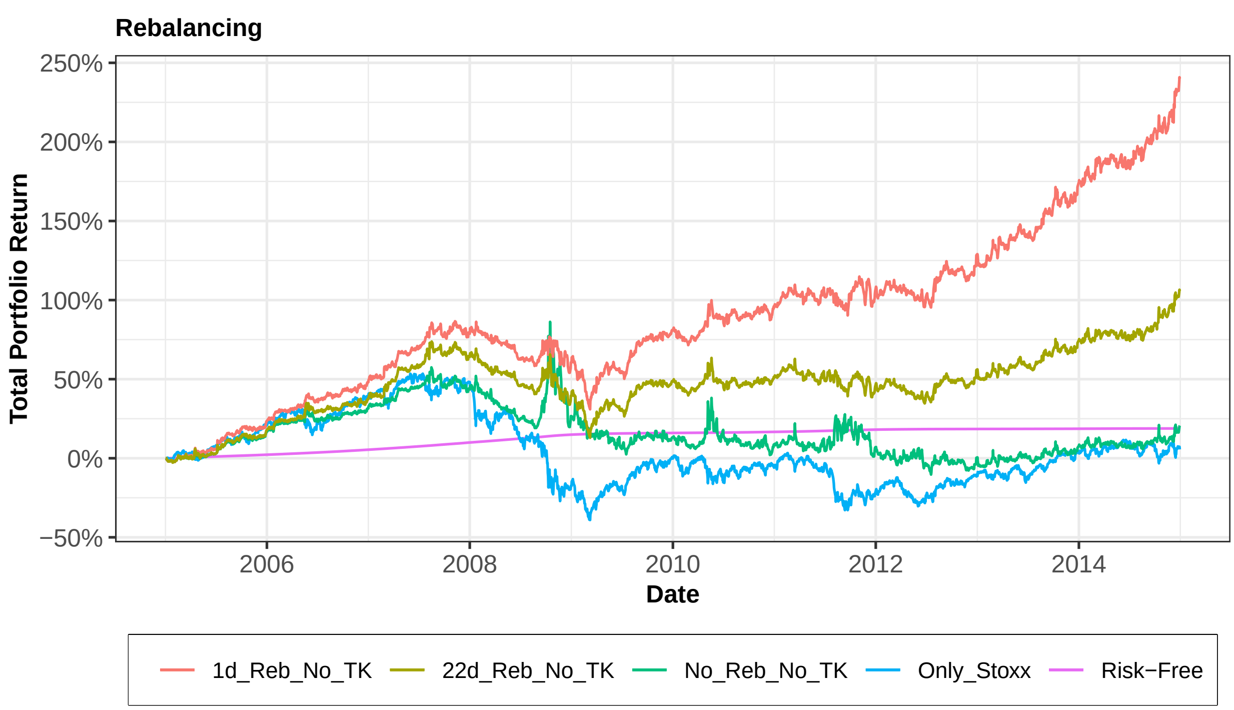

Rebalancing (all)
250%
200%
150%
100%
50%
0%
−50%
Total Portfolio Return
2006
2008
2010
2012
2014
Date
1d_Reb_No_TK
5d_Reb_No_TK
Only_Stoxx
22d_Reb_No_TK
No_Reb_No_TK
Risk−Free

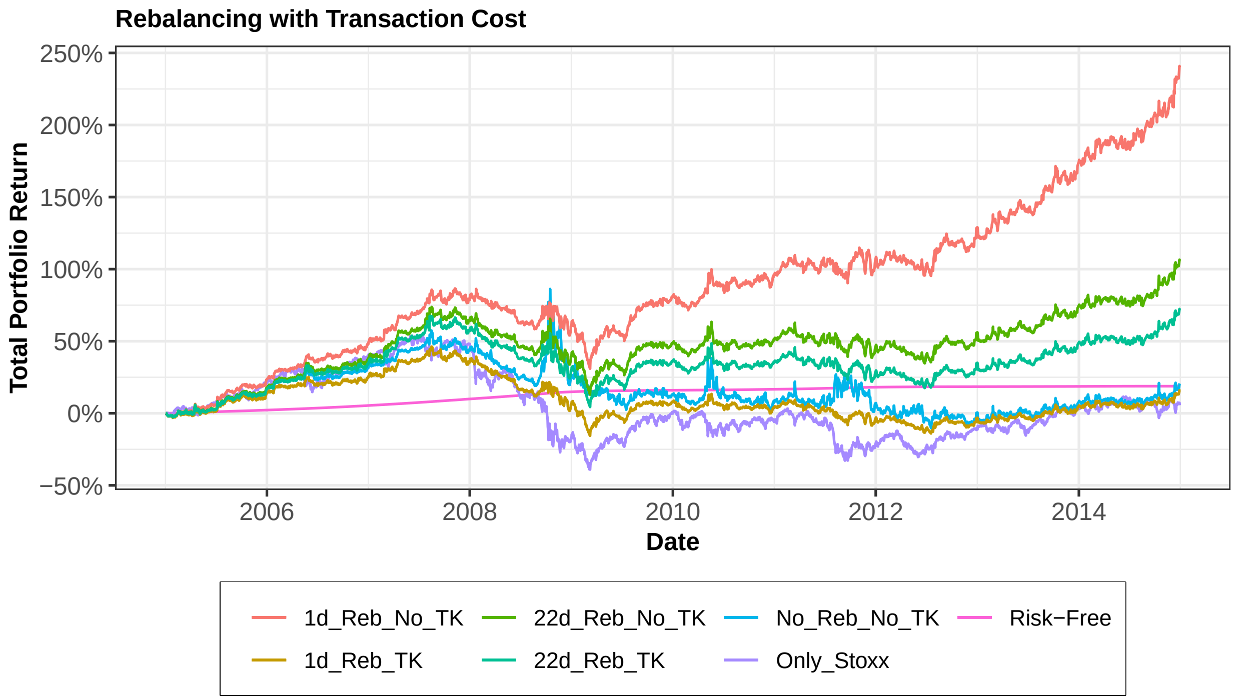

Rebalancing with Transaction Cost (all)
250%
200%
150%
100%
50%
0%
−50%
Total Portfolio Return
2006
2008
2010
2012
2014
Date
1d_Reb_No_TK
22d_Reb_No_TK
5d_Reb_No_TK
No_Reb_No_TK
Risk−Free
1d_Reb_TK
22d_Reb_TK
5d_Reb_TK
Only_Stoxx




```
## [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
Total Portfolio Return
50%
0%
2006
2008
2010
2012
2014
Date
No_Reb_No_TK
Only_Stoxx
Risk−Free


Rebalancing
Total Portfolio Return
250%
200%
150%
100%
50%
0%
−50%
2006
2008
2010
2012
2014
Date
1d_Reb_No_TK
22d_Reb_No_TK
No_Reb_No_TK
Only_Stoxx
Risk−Free



3.2 Delta-Hedging (not done)

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