Trading tulips

Admirael de Man (AdM)

Admirael Laotur (AL)

Anvers (A)

Generael Otto (GO)

Jan Symonsz (JS)

Kamelot van Weena (KvW)

Kleine Alexander (KA)

Semper Augustus (SA)

Switser (S)

Verwindt (Ve)

Viseroij (Vi)

Zomerschoon (Z)

Covariates

Hourly features:

1. Open
2. Close
3. High
4. Low
5. Volume 1h
6. Number of trades 1h
7. Return 5m
8. Return 15m
9. Return 30m
10. Return 45m
11. Return 1h
12. Realized variance 1h
13. Realized skewness 1h
13. Realized kurtosis 1h
14. Parkinson variance 1h
15. Garman-Klass variance 1h
16. Rogers-Satchell variance 1h
17. Long short ratio 5m
18. Long short ratio 15m
19. Long short ratio 30m
20. Long short ratio 45m
21. Long short ratio 1h
22. Forward premium open
23. Forward premium close
24. Forward premium high
25. Forward premium low

Prices in gulden and logarithmic returns

Submission

For each hour, the portfolio composition $\boldsymbol{w}_t$.

The portfolio can be long and short in each tulip, with a constraint on margin: $\boldsymbol{w}_t$ is an array of length 13 normalized in absolute value, i.e.

$$\sum_{i=1}^{13} |w_{t,i}| = 1,$$

where the last element of the array is the percentage of the portfolio allocated in cash.

Evaluation

Net portfolio return:

$$\bar{r}_t = \sum_{i=1}^{12} w_{t,i}\, r_{t,i}\,,$$

where $r_{t,i} = \frac{c_{t+1,i}}{c_{t,i}} - 1$ and $c_{t,i}$ is the close price price of the i-th tulip at time t.

Portfolio rotation incurs **transaction costs** of f = 0.5 bps (5e-5) per traded Gulden. Rebalance cost:

$$C_{t-1}\left|w_{t-1,i}(1 + r_{t-1,i}) - w_{t,i}(1 + \bar{r}_{t-1})\right| f,$$

Cost adjusted portfolio returns:

$$R_t = \bar{r}_t - f \sum_{i=1}^{12} \left| \frac{w_{t-1,i}\left(1 + r_{t-1,i}\right)}{(1 + \bar{r}_{t-1})} - w_{t,i} \right|,$$

Annualized Sharpe ratio:

$$S = \frac{\langle R_t \rangle}{\sigma_{R_t}} \sqrt{365 * 24}.$$

Alpha

The alpha is the measure of the active return of a trading strategy, i.e. of its edge.

Find **your** alpha: statistical pair trading, momentum or mean-reversion trading, a predicting model better than other market participants…

Execution

Depending on the strategy and the type of alpha, your strategy and signals might have alpha only for certain tulips and / or at certain times.

Try not to take unnecessary risk, or to pay excessive transaction costs. Make use of the possibility of holding cash, and only trade and hold positions when you expect to make a profit!

Will you manage to steadily navigate the risks of a trading bubble?
Will you thrive or go bankrupt in the 1600 tulip mania?

Good luck and have fun!