

# 1 Results

For the following results we consider 3 types of parameterizations for the portfolio problem. The first is a simple case where the assets are identically distributed as seen in (Cai, Judd and Xu 2013), the second is a case where the parameters are chosen to match the parameters in (Schober, Valentin and Pflüger 2022) also seen in (Gaegauf, Scheidegger and Trojani 2023), and the last is a modification of the first case where the correlation between the assets is larger (correlation coefficient of 0.75).

**Table 1:** Parameters for Examples of Portfolio Problems

	i.i.d Assets	Schober Parameters	High Correlation
$T$	6	6	6
$k$	3	5	3
$\gamma$	3.0	3.5	3.0
$\tau$	0.5%	0.5%	0.5%
$\beta$	0.97	0.97	0.97
$r$	3%	4%	3%
$\mu^\top$	(0.07, 0.07)	$\mu_{\text{Schober}}$	(0.07, 0.07)
$\Sigma$	$\begin{bmatrix} 0.04 & 0.00 \\ 0.00 & 0.04 \end{bmatrix}$	$\Sigma_{\text{Schober}}$	$\begin{bmatrix} 0.04 & 0.03 \\ 0.03 & 0.04 \end{bmatrix}$

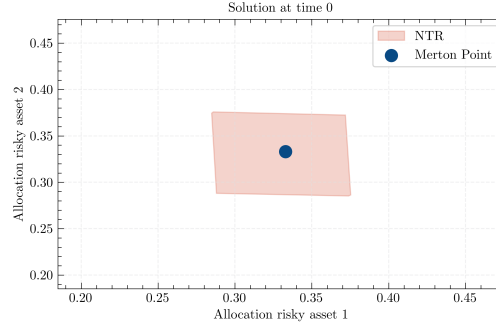
$$\mu_{\text{Schober}}^\top = \begin{bmatrix} 0.0572 & 0.0638 & 0.07 & 0.0764 & 0.0828 \end{bmatrix}$$

$$\Sigma_{\text{Schober}} = \begin{bmatrix} 0.0256 & 0.00576 & 0.00288 & 0.00176 & 0.00096 \\ 0.00576 & 0.0324 & 0.0090432 & 0.010692 & 0.01296 \\ 0.00288 & 0.0090432 & 0.04 & 0.0132 & 0.0168 \\ 0.00176 & 0.010692 & 0.0132 & 0.0484 & 0.02112 \\ 0.00096 & 0.01296 & 0.0168 & 0.02112 & 0.0576 \end{bmatrix}$$

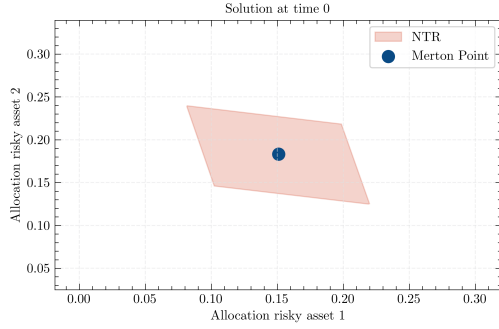
## 1.1 Dynamic Portfolio Choice without consumption

I first consider the base model with proportional transaction costs and no consumption. In the absence of consumption, the optimal portfolio is the merton points, which we plot in every figure. I plot the No-trade region at time point 0 (initial time point) for each of the parameterizations in Figure 1.1. When using the Schober parameters we select the  $d$  first elements of the mean vector, and truncate the covariance matrix to a  $d \times d$  matrix, depending on the number of assets  $d$  in the model.

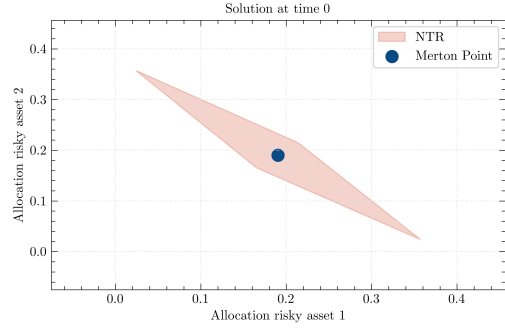
**Figure 1.1:** Comparison of No Trade Regions.



**(a)** No Trade Region for Independent Identically Distributed Assets.



**(b)** No Trade Region for Schober Parameters.

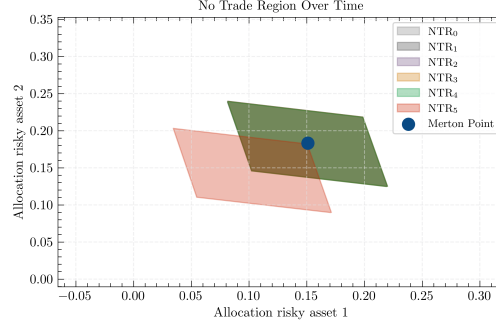


**(c)** No Trade Region for High Correlation.

### 1.1.1 Investigating the No-Trade Region

We now look at the No-Trade region for the base model with proportional transaction costs and no consumption in more detail. Specifically we look at how the region behaves over the entire investment horizon  $[0, T]$ , and how the region changes with different transaction cost levels. We choose to look at the model with the Schober parameters, as this is a mixture of the other two parameterizations.

**Figure 1.2:** No Trade Region for Schober Parameters over Time.



The No-Trade region is plotted for the Schober parameters over the entire investment horizon  $[0, T]$ . For time points  $t \in [0, T-1]$  the no-trade-region (NTR)s overlap.

**Figure 1.3:** No Trade Region for the iid Parameters with different values of  $\tau$ .

