Estimating Expected Shortfall Sensitivities by AAD

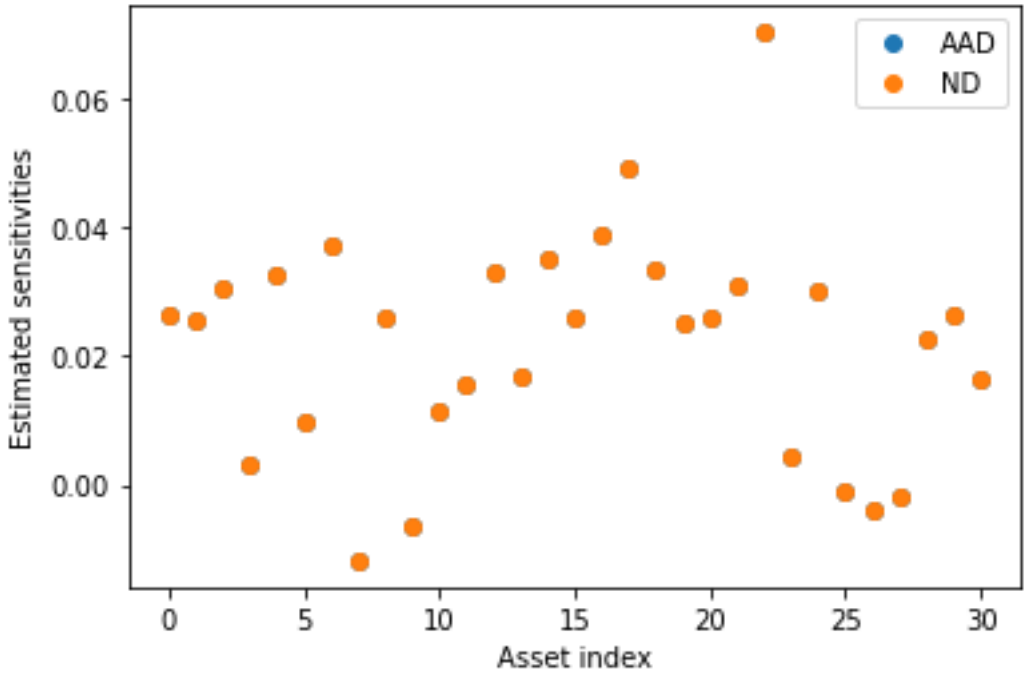
- Expected Shortfall: $S_q(h) = \mathbb{E}[X(h)|X(h) \geq x_q(h)]$.

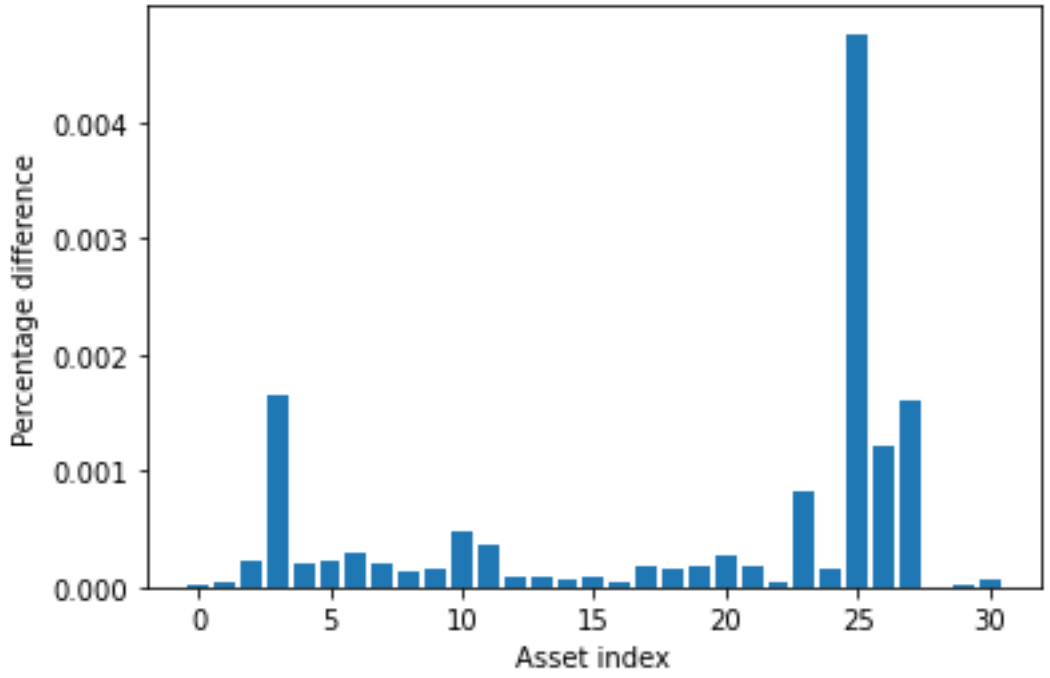
- Specifications based on Basel Committee standards:
  - Horizon: 10 days
  - Quantile: 0.025

- Estimator: (conditional) $\hat{S}_q^t(h) = \frac{1}{nq} \sum_{j=1}^{n} X_j^t(h) \mathbb{1}_{\{X_j^t(h) \geq \hat{x}_q^t(h)\}}$

Validity of estimated sensitivities: portfolio weights

Positive sensitivities to all portfolio weights except for negative sensitivities to bond indices.





Results: Computational costs

Total computational time to compute all 95 sensitivities:

- AAD: 5.75 seconds
- ND: 31053 seconds (8.6 hours)