Exercise 6A: Turnover and Transaction Cost Analysis

BUSI 722: Data-Driven Finance II

Use the portfolio returns and weight series from Exercise 5. Load `merged.parquet` for any additional computations.

Submission

Submit a **Jupyter notebook** (`.ipynb`) containing all code, output, and charts. Use markdown cells for any written discussion.

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1. For the **linear-weight long-short** portfolio (Exercise 5B), compute the monthly **turnover**: $\text{turnover}_t = \sum_i |w_{i,t} - w^+_{i,t-1}|$ where $w^+_{i,t-1}$ is the drift-adjusted weight from the prior month.
2. Report the mean, median, and maximum monthly turnover.
3. Estimate net-of-cost returns under three cost scenarios:
   - **Low cost:** 5 bps per unit of turnover (institutional)
   - **Medium cost:** 20 bps per unit of turnover
   - **High cost:** 50 bps per unit of turnover
4. For each scenario, report the net Sharpe ratio of the long-short portfolio. In a markdown cell, discuss at what cost level the strategy becomes unprofitable.
5. Plot gross vs. net cumulative returns for all three cost scenarios.