Dataset

1. stocknet
2. S & P 500 (self made) [TODO]

Benchmark

1. Diffusion Factor Models
2. Stationary Bootstrap

Evaluations

Distribution with the training data.

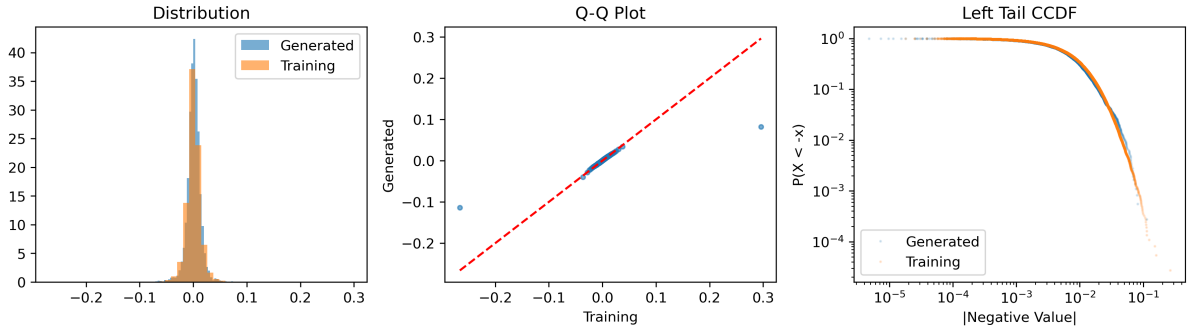
1. For each stock, extract movement percent (daily return): $r_t = (P_t - P_{t-1})/P_{t-1}$
2. Align 8 stocks to common trading dates (1257 days)
3. Generate scenarios using sliding window:
    - Window size: 8 days
    - Step size: 1 day
    - Windows with fewer than 32 days are discarded
4. Missing values are handled using linear interpolation

In the end we get an dataset of shape [1250, 8, 8]. This is how we trained the factor model. Afterwards, to test the factor model, we generate 128 scenarios to get the shape of [128, 8, 8]. Then we evaluate the sampled data distribution compared to the training data.

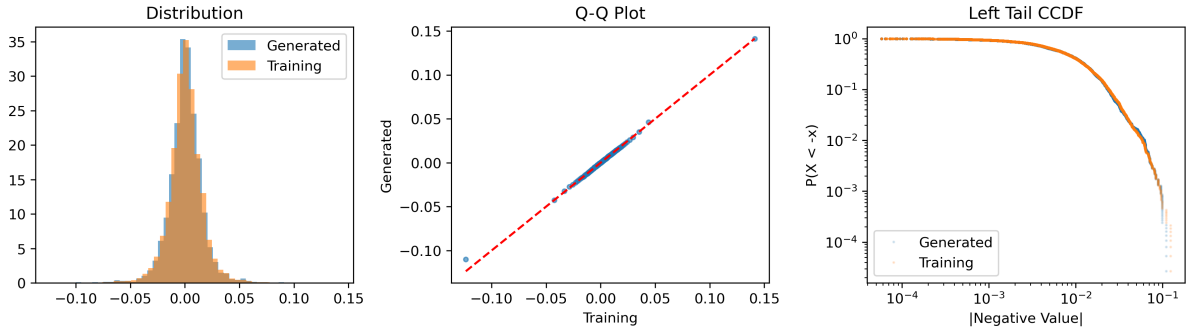
To test the stationary bootstrap, we sampled [1257, 8] and use window size 8 and stride 1 to get [1250, 8] on both training data and resampled data.

Evaluation Results

Method	MMD	Cov Error	ES (5%)	ACF	Mean	Std	Skew	Kurt
GT	-	-	-0.0306	0.0716	0.0006	0.0136	0.1767	12.1850
factor_DM	0.002790	0.307484	-0.0304	0.0759	0.0011	0.0128	-0.4561	5.5397
stationary bootstrap	0.000000	0.210477	-0.0357	0.0757	0.0007	0.0157	-0.0017	5.9343



Factor_DM



Stationary Bootstrap

Generate strategies based on tail scenarios, test on real crisis, and evaluate the performance.

Use the generated scenario to test benchmark strategies, should perform worse than normal