

Financial AI

Homework 4

Due at 06:00 pm (Korea Standard Time) on Saturday.

Problem 1.

(a) Solve 3 problems in the book. Select each one from easy, medium, and hard, respectively.

Problem 2. Generates 3000 random log-normal stock price paths. Each stock has

Initial price:100, expected return(annual):0.05, volatility(annual):0.2, time horizon in years:1, business days in year:250.

Note) Please make sure to understand what log-normal is. Please check whether generated stock paths have the appropriate moments(적률) or not.

(a) Plot 3000 stocks. Then plot Top 30 stocks with highest ending period price.

(b) Calculate the average Sharpe ratio of 3000 stocks and Top 30 stocks. Calculate the Sharpe ratio by (annual return / annual volatility).

(c) Is it okay to invest money on these 30 stocks? If not, why?

(d) Now, we have longer time horizon in years:5. Repeat (a) and (b).

(e) What intuition we can get from these results? Think about the relation with backtesting.