Assignment 4

(Due: 11:59 pm. Jun. 5, 2024)

You need to construct a portfolio consisting of a passive portfolio and three stocks you already selected, doing the Assignment 2. If you selected Korea (USA) stocks, use KOSPI 200 (S&P 500) for the passive portfolio. You construct your optimal risky portfolio based on single-index model that was covered in class. Don't hand in data or your program code.

a)   What were the names of the individual stocks you have chosen in assignment 2? Indicate the source database.

b)   With the 60 recent monthly returns of the chosen stocks, and the monthly T-bill rates for the same period, run regressions and report the estimated beta, alpha, t-value or p-value, R squared and residual SD of each stock and documents them.

c)   Assume that the average of the risk premium of the index, forecasted by investment companies, is 6% and its standard deviation is 15%. Or you may use the past average excess return for the index. If you make the optimal risky portfolio according to SIM, you need alpha of the expected return for each stock. There are three options such as i) you may randomly choose these numbers. If this is the case, be reasonable to set the value for alpha, or ii) you may use the estimated alpha in b) for future alpha (As you know, this won't hold generally), or iii) you may accept the 12-month future price suggested by analysts and calculate alphas using SCL.
What is your choice? Construct and report your optimal risky portfolio consisting of the index and the three stocks maximizing Sharpe ratio. Assume short-sale is allowed.

e)   What is your Information ratio for the active portfolio you have chosen?

f)   Compare Sharpe ratio of the optimal risky portfolio with Sharpe ratio of the index portfolio.