

Homework 3/Final Project

PSTAT 176/276, Spring 2024

Homework 3: Problem (1)-(3) and submit due Thursday June 6th 11:59pm PST.

Final Project on Problem (1)-(6) due Thursday June 13th 11:59pm PST.

1. (1) Read the article “10 of the Best stocks to buy for 2024”

<https://money.usnews.com/investing/articles/best-stocks-to-buy-this-year>

from April 30, 2024.

(2) (CAPM: Data Analysis) We shall analyze these 10 assets with the mean-variance analysis. Download the available daily data from Jan. 2022 - Dec. 2023 first. Pretend that we do not know what would happen in Jan. - June 2024.

(a) Compute the daily log return from the data. (b) Estimate the annualized log return and the annualized variance-covariance of log return. (c) Plot the minimum variance curve in the (σ, μ) plane. (d) Compute the minimum variance portfolio and plot it in the (σ, μ) plane. (e) Compute the capital market lines with different annual interest rate $r = 0.01, 0.05, 0.10$ and draw them in the (σ, μ) plane.

(3) Interpret the capital market line and explain how to recommend the portfolio which consists of risk-free asset and those 10 best stocks.

Homework 3 ENDS.

(4) Evaluate the performance from those 10 stocks in (1)-(3) for January 1, 2024 - May 31, 2024 by downloading the data, analyze the performance of ten stocks and portfolios in the capital market line.

- (5) Read the article “How to U.S. News’ Top 10 stocks for 2020 performed”

<https://money.usnews.com/investing/stock-market-news/articles/how-did-us-news-best-stocks-to-buy-perform>

from Jan. 7, 2021 by John Divine.

(a) Check those figures discussed in the table, for example, Facebook (FB) 35.92 % and so on. (b) Analyze the claim: “It’s only fair for us to be accountable to our readers, looking back on the performance of the flagship 10 best stocks to buy list when the time comes.”

(6) Suppose now that you start a new investment firm in Santa Barbara. Make a reasonable plan for a short term return goal and a long term return goal in terms of portfolio return and risk. Choose assets from different markets (stock, money market, crypto, currency, option) and discuss how to optimize your portfolios to achieve short term and long term goals. You have flexibility to choose different assets and their mix and justify your plan.