Homework #1

FBE 551

Due on 9/17/2025 by 11:59pm

This is an individual homework assignment. To complete the problem set, you will need to use the SPY.csv and BND.csv data files available in the Homework folder. Please do not use any other versions.

Carry out the following calculations in a single Jupyter notebook. Make sure that I will be able to run it. For example, read in the CSV files from the current directory. I.e., do not write the full path of the file in your code. Do not have your code change directories to a pathway that is probably not valid on my computer. This will allow me to run your notebook in any directory on my own PC.

Please use markdown cells to help me understand what you are doing. (I know it may be obvious, but I want to see that you know how to use markdown.) Clearly highlight what parts of your notebook are used to answer each question below.

1. Read in data from the SPY_HW1.csv and BND_HW1.csv files, making sure that the resulting dataframes are indexed by date. Create a new dataframe that contains the open, close, and adjusted close prices for both SPY and BND on the dates for which there is data for SPY. Do not include other columns. Display the top 10 rows of the dataframe. Display set of summary statistics (mean and SD, etc.) for the entire dataframe using the 'describe' command.

2. Load data from the BND_HW1.csv file into a Pandas dataframe. Have your Jupyter notebook display the following, each in a different output cell. For each, show no more or no less than the values requested, though you may choose whether or not to display the dates.

    a. The 1000th row of the dataframe.
    b. The row of the dataframe corresponding to 6/4/2010.
    c. The closing price of BND on 6/4/2010.
    d. The first 5 days of open, close, and adjusted close prices from the year 2010.
    e. The average close and adjusted close prices on the days in which the BND close was greater than $85.

3. Load data from the SPY_HW1.csv file into a dataframe.
    a. Compute and display the average rate of return over the daytime period (open-to-close), and the nighttime period (close-to-open).
    b. Compute and display the average full-day return using close-to-close prices
    c. Compute and display the average full-day return using adjusted close-to-adjusted close prices.
    d. In a markdown cell, write a short explanation of why the numbers from b (close-to-close) and c (adjusted close to adjusted close) are different.