Econ 525 Prof. Aguilar
Advanced Financial Economics UNC at Chapel Hill

Matlab HW#1 - 01/25/19 @ 5:00pm

Instructions:

- You must state and justify any and all assumptions you make in the assignment.
- Your submission must be a professional presentation of your work.
- Students may collaborate, but each student must follow the honor code, and submit their own work. Obvious instances where more than one student utilizes the same spreadsheet or commentary will not be tolerated.
- This assignment must be completed using Matlab.
- Your deliverable should be a single m file with the following naming convention: "FirstName-LastName-HW#.m".
- This m file should be submitted to the QFE sakai dropbox by the due date and time stated above.
- The m file should include code for importing the data, as well as producing the requested figures.
- Provide any files (Excel, csv, etc) that are necessary for the m file to run.
- The m file should be heavily commented, detailing every step of your calculations. Please include the answers to the questions below within these comments.
- Please include the following in the preamble of your code:
  - %Purpose:
    %Econ 525-Spring2019
  - %Note:
    %This m-file is dependent upon xyz files.
  - %Author:
    - %Name — Date
    - %UNC Honor Pledge: I certify that no unauthorized assistance has been received or given in the completion of this work.

The goal of this assignment is to estimate and interpret a factor model for asset prices. Consider the following:

- Universe: SP500 constituents as of 1/1/2018
- Databases: Quandl Wiki Database via API, WRDS web pull, or Factset via Excel.
- Estimation Period: 2012-2017
- Return Specification: Log returns, HPY; Monthly
- Macro Factors: US 10yr Treasury yield, 10yr-2yr US Treasury yield spread, SP500 dividend yield, %Δindustrial production

1. Estimate a standard two-pass factor model.
    a. Create a table with rows as tickers, column 1 as average returns, columns 2-5 as $\hat{\beta}$'s. (3pts)
    b. Interpret your findings 1-2 paragraphs (variation in betas, commonality amount the highest/lowest betas, etc...). (2pts)
    c. Create a table with rows as factor name, column1 as $\hat{\lambda}$, column 2 as t-stat. (3pts)
    d. Interpret your findings 1-2 paragraphs. (2pts)
2. Estimate a Fama MacBeth factor model.
    a. Create a table with rows as tickers, column 1 as average returns, columns 2-5 as $\hat{\beta}$'s. (2pts)
    b. Interpret your findings 1-2 paragraphs (variation in betas, commonality amount the highest/lowest betas, etc...). (2pts)
    c. Create five time series graphs. Each illustrates the time variation in the $\hat{\lambda}$'s over time. (2pts)
    d. Interpret your findings 1-2 paragraphs. (2pts)
    e. Create a table with rows as factor name, column1 as $\hat{\lambda}$, column 2 as t-stat. (2pts)
    f. Interpret your findings 1-2 paragraphs. (2pts)