香港中文大學(深圳)
The Chinese University of Hong Kong, Shenzhen

MDS5001 Introduction to Python - Group Project

Build Your Own 3-Factor Asset Pricing Model

Background:
The aim of this group assignment is to practice Python programming and analytical skills learnt in class and apply them to a real scenario from modern financial markets. This assignment requires you to create your own version of 3-factor model based upon the CAPM model and two other factors, being Firm Size (you can proxied it using Market Cap) and a 'wild' factor you find relevant and interesting (e.g. liquidity which can be proxied by trading volume). You may find a few reference papers here:
https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

Data:

- Stocks: you may scrap or download data for a minimum of 30 stocks plus a market index (e.g. 30 stocks in U.S. markets plus SP&500 index).
- You can find the risk-free rate on the website of the central bank from the home country of the market you choose.
- Sample Period: 1 year (July 1, 2018 - June 30, 2019).

Tasks:

1. Background research. Read the relevant literature (e.g. CAPM Model and Fama-French 3-Factor Model);
2. Locate and prepare the data - Scraping the research data using Python or download the data you need from a public available data source (e.g. Yahoo Finance);
3. Write a piece of Python code to firstly clean and analyse the data (e.g. summary statistics) and subsequently implement and estimate your version of the 3-factor model (e.g., multivariate analysis);
4. Part of the output from (3) above are plots that visually summarises your raw data, average daily risk premium, market cap, and the additional factor you found;
5. Please incorporate your solution description/analysis as well as you code in a Jupyter Notebook and create HTML slides from your Notebook;
6. Each group will do a 8-10 minutes presentation in the last lecture.

Submission:
Each group shall email your final research data, all parts of Python code, and HTML file in an organised way by ***9 pm on August 20, 2019***:

- In the subject of your email, please put down <*MDS5001 Group ## (your group number) Assignment*>;
- In the body of the email, please include student ID, name of all group members. You can also add a short paragraph to briefly explain your model.