Final Project Instructions

May 5, 2020

Outline

Find the data set of your choice among the two provided data sets. Carry out a time series analysis, taking advantage of what we have learned in this course. You are free to use models and methodologies out of the course if desired. Justify your analysis.

Due: May 13th, 5:00 pm (NY Time). Submit a report to CourseWorks.

You must work independently to get credits.

Provided Data Sets

- Nasdaq-100 data: the daily adjusted close price of Nasdaq-100 index from 2008.01.02 to 2020.05.01.
- JPMorgan Chase & Co data: the weekly open price of JPM from 2000.01.01 to 2020.04.25.

Expectations For the Report

General Rules:

- The report must be in a concise and organized form. You are free to use most of the popular text-formatting tools, like Doc, Markdown, Latex, and so on. Transform your report to PDF and **the submitted report must be in PDF format**.
- Briefly introduce methods/models you use, especially when you decide to use models/methods not covered in the class.
- Figures and table must be easy to read and properly positioned in the report. It is unnecessary to position figures/tables to be within the text or surrounded by the text. However, the readers must be able to find the tables/figures easily whenever you refer to them in the text. Try to give

figures and tables captions, titles, axis-labels, and legends if necessary. There are strong evidences indicating that a report with beautiful and easy to read figures/tables is more likely to get high scores.

- Copies of raw and unorganized R outputs should not appear in your report.
- There is no page limit. However, keep in mind that a longer report is not necessarily better. You may want to try many things, but only write up analysis supporting your objective. Be sure to have clear and strong motivation before conducting the analysis.
- Codes should not appear in the main text. You can put codes as attachments.
- References: It is important to make references where appropriate. It is important not only for the final report, but also for all your future writing. You don't need to make references for everything. For example, calculus is so fundamental that you don't need to cite works of Isaac Netwon or Gottfried Leibniz.

Your report should include several key sections

- Introduction: You should explain in a concise form some background to the data you chose, and give motivation for the reader to appreciate the purpose of your data analysis.
- Objective: Select and explain your objective for analyzing the data set.
- Exploratory data analysis: Summarize and visualize the data. If necessary, clean the data that might include handling missing values, extreme values and so on.
- Use of appropriate statistical methods/models. A complete statistical analysis process should include estimation, model selection, model diagnosis, and so on.
- Conclusion and interpretation of your results.
- Raise questions/directions for future research.