

Financial Econometrics

2022/23

Homework 1

Professor Michael Rockinger

Due Date: Monday, January 16, 2022. Please, hand in your results as PDF files.

Jupyter notebook pdfs with comments are also ok

Problem 1: You are one of the referees of the Journal of Finance and you are as critical as your peers are with you. You have been asked to write a referee report of the paper: Paul Glasserman, Fulin Li, Harry Mamaysky, Time Variation in the News>Returns Relationship, 2022. For your information, Fulin is a Ph.D. candidate on the job market (whom we will interview and whom we d'like to hire). What is your recommendation?

Problem 2: In Lecture 1 we have discussed how the simple Euler equation can be calibrated by using actual data. Please go again through the calculus leading to formula 19, page 6 of the first lecture notes. Implement this formula in Python/Numpy and verify my numerical calculations (never trust the calculus of others especially not of your professors)! **If risk aversion increases, what do you think should happen to the expected gross return of assets? What should happen to the equity risk-premium? Can you trace the equity risk-premium as a function of γ ? What do you conclude about this simple model?**

Problem 3: You have been given the data file: GMMDData.csv. Load this USA data in a Panda. Transform the time into datetime. The data is monthly. The various columns are the SP500 stock market index. A dividend for the SP500 (your data provider has not specified where this comes from). Then the CPI (consumer price index), a 10 years horizon fixed maturity interest rate and the series of all US consumption (in billions of USD, seasonally adjusted).

Question 1: construct the real log consumption growth ratio.

Question 2: construct the real monthly stock market return (simple return is ok but with correctly adjusted dividends). Use your intuition to get the orders of magnitude correct.

Question 3: construct the real long-term interest rate.

Question 4: Present the usual suspects (mean, standard deviation, skewness and kurtosis) annualized! Correlation of this crowd.

Question 5: Present visually the data. What do you think about the quality of this data?