Project assignment

Financial Econometrics II, 2024/2025

Deadline Part A + B: October 29, 2024

Send your solution as `01_proj_fin_eco_a_b_your_name.zip` to `lubos.hanus@fsv.cuni.cz`.

Project 1 (P1) details:

Students are encouraged to form a group of two for Project 1, which will be assigned in three small parts during the semester. Evaluation of this project will be during or after the midterm week when students will present and discuss their results.

The results should be clear and well interpreted. We mostly do not want to see your code, but more importantly is your question/task and how you have achieved it.

Present and explain it well, we can understand your solution.

Part A

1. We ask you to create a folder for you project, in which you will be working on the project. You will be asked to send us this project that we can look at your progress and browse through your work. Please follow the instructions in the seminar or a documentation of julia about the activation of an environment and use it for your project. (It can be found also here: https://pkgdocs.julialang.org/v1/environments/ even it is from prompt/terminal, in a notebook use `Pkg.activate(".")`)
    - In your project, you will be adding packages, using them, you can create a script files as well and load them (with helper functions if needed.)
2. Use package `MarketData`, `Quandl`, `YFinance` or different one, if needed go to their github pages and `docs`, then **download data for an asset** of your choice.
    - comment on
3. Use plot to look at the data, do some summary statistics, `Statistics`, `DataFrames`, `StatsPlots` packages
    - comment on
4. Use `ARCHModels.jl` to **model** asset data and **forecast**.
    - comment on
5. **Plot** forecasts of ARCH/GARCH, it can by using rolling or static procedure.
    - comment on

This part is for you to get you familiar with julia, its syntax, and packages.

Part B

Perform *OLS* vs *ML* estimation of HAR model. Comment on the comparison taking into account the following.

- Estimate coefficients with different approaches
- Optim.jl vs Flux.jl
- Discuss coefficients, show them in scatter, histograms
- Test different activations in NN
- Play around with regularizations
- Make Q-Q plots, a table of performance