TIØ4317
Empirical and Quantitative Methods in Finance
Exercise 5

Instructions

Solutions to the problems will be posted on BlackBoard after the deadline. You can use either Excel or a high-level programming language, e.g., R or Python, to solve the programming exercises. We suggest that you write your solutions using MS Word or LaTeX. Also, hand in all code and/or Excel files.

Deadline: Monday March 3rd, 2025, 23:59. **Grading:** Passed/Failed.

Tasks

Open the Gasoline data set. In this question your focus is on identifying the best in -sample model for the volatility of Gasoline returns.

1. Start from mean dependence and identify the best equation for the conditional mean.
2. Investigate the presence of time series heteroskedasticity and non-linearities.
3. Fit a GARCH model and identify the orders you need using the information criteria.
4. Is the model generating a covariance stationary volatility equation? Justify your answer.
5. Fit a FIGARCH model, comment on the significance of the delta-parameter.
6. Fit a TARCH model using the information criteria to identify the best orders of lags.
7. How could you allow the brent return (Brent dataset) to impact the volatility of the Gasoline returns?
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