Portfolio Allocation

Final Assignment

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Portfolio Allocation Course Assignment

- In this assignment, you will investigate two techniques we studied in the course: robust control and covariance matrix filtering. Your goal is to compare combine and contrast these techniques in terms of their strengths, weaknesses, and applicability to different types of investment strategies.
- You have the freedom to choose the approach and methodology for your analysis, but your results must be clear and well-supported. You may use any of the metrics studied in the course to gain a better understanding of the techniques and their outcomes.
- You analysis should include a portfolio with rebalancing of the weights over a sufficiently long period of time, taking into account transaction costs. You should also specify the transaction costs you are assuming (~0.05%).
- Submit your code on Edunao before 22 March 23:59. Please also add your presentation slides. Only one submission per group, and specify the name of the members.

Some Ideas

- What is robust control, and how does it differ from traditional mean-variance optimization? What are some advantages and disadvantages of robust control?
- What is covariance matrix filtering, and how does it help mitigate the effects of estimation errors in portfolio optimization? What are some popular covariance matrix filtering methods, and how do they compare in terms of computational efficiency and accuracy?
- What are some practical applications of robust control and covariance matrix filtering in portfolio management? How do these techniques perform in different market conditions or investment strategies?
- Based on your analysis, what are some key takeaways for portfolio managers who want to use these techniques in their investment process? What are some potential challenges or limitations to be aware of?

Advises for the Presentation

The presentation is 15 min + 5 min of questions. We will interrupt you if you exceed it.

- Provide a concise description of the methodology you used.
- Clearly explain the procedure you followed for selecting the stocks.
- Ensure that the plots are clear and easy to understand, with visible ticks, labels, and legends.
- During the presentation, comment on each plot or table to help the audience understand the significance of the results. Avoid including unnecessary information simply to show that you ran multiple simulations.
- In your conclusion, summarize your analysis in a way that is easy for a client who may not be familiar with technical aspects to understand. Provide a clear message that highlights the key takeaways from your analysis.