20248 - Asset management

Assignment N° 1
Mean – Variance Asset Allocation

DUE DATE: November, 16th

The question had been nagging him for the last three hours: if the market was efficient why he had to work for such a stupid boss. The guy was probably a five standard deviations event in the world idiocy distribution. He probably thought that Markowitz was a fancy restaurant down in Piccadilly.
Working with him was usually a nightmare, but the question at hand was really out of scale: the research department had produced a report on medium term stock returns where Japan stood out thanks to a much waited improvement in local macroeconomic conditions. His boss had the report on his table when a medium size institutional asked for a 5-years asset allocation for a 100 m$ portfolio with a target standard deviation around 15% on a yearly base.
At that moment something clicked in the emptiness of that beautiful mind and his boss decided to suggest a portfolio heavily weighted on Japanese stocks. His reasoning was "solidly" based on three "very sound" assumptions:

1. *The client wanted a high risk portfolio, so it should not be scared by a daring allocation*
2. *The solution proposed came from the standard mean variance model used all over the world and so was not questionable (in fact Markowitz had won a nobel for this thing, probably before he opened the restaurant in Piccadilly)*
3. *This portfolio had an expected return around 9.9% instead of the forecasted 9.26% for the world equity market (the benchmark for the equity portion of the portfolio). Since they had a standard performance fee equal to 20% of the active return this could produce, after 5 years, some serious fees.*

The problem, for Mark, was that now he had to write the report for the client suggesting this "daring" allocation. At five in the morning he dutifully finished his job but, since going home was not an option, he decided to give it a last try and write a short report in order to

1. *Cover his own back*
2. *Try to convince his emptiness about the mistake he was going to do*

TO DO

The report you are going to write should be short (5-7 pp max) and clear, and should contain:
1. A clear explanation of the risks involved in the investment in the mean-variance portfolio. You should try to justify these risks economically and or statistically and maybe find a way to quantify. Creative ideas in this area are welcome, provided that they are correct.
2. A suggestion of an alternative asset allocation. You should clearly state and explain the methodology used, and justify the parameters choice.
3. A clear and convincing explanation / demonstration of the superiority of your portfolio over the other one.

Hints:
- Feel free to make all the assumptions that you need in order to complete your exercise but state them clearly.
- Remember that you have to convince somebody, so try to justify with numbers and/or solid reasoning every key statement.
- If you have to choose between a clear and convincing explanation and a long, tedious, statistically bulletproof and Corielli-compliant reasoning choose the former. Maybe the latter could be a nice appendix.
- **The output should be a doc/pdf document with the report and a zip files with all the matlab codes and or excel files used/generated.**
- You will face a lot of problems: it's normal...life is complex!