

Python For Optimization in Finance

Data provided

- 105 anonymized ETFs since 2019
- 14 historical prices of main financial assets
 - Regional equities
 - Regional Sovereign Bonds
 - HY Bonds
 - Commodities and the Dollar Index
- Mystery Allocation among the 105 ETFs: the allocation is fixed over the period
- Mystery Allocation among the 105 ETFs: the allocation is dynamic over the period but does not vary often

Objectives of the project

- Classification of ETFs on various risks, relationships, and performances criteria
- Relationships between ETFs and main assets classes: could you identify each ETF in relation to the main asset classes?
- What are the ranges of risks among the ETFs?
- Could you identify the Mystery Allocation: composition and uncertainty on the results?
- Can you comment on the results? Are there biases or forgotten assets classes among the ETFs?

Project Deliverables

- **Team Composition:**
Work in groups of up to **three (3) members**.
- **Submission Deadline:**
Submit all deliverables by **Sunday, December 14th, 2025, at 11:59 PM.**
 **Late submissions will be penalized for each day of delay.**
- **Deliverables:**
You must submit **two files**:
 1. A **Python file (.py)** containing your complete project code.
 2. A **PDF report (.pdf)** that must:
 - **Begin with your full code** copied and pasted in its raw form.
 - After the code section, you are **free to organize the rest of the document** as you wish. However, it should include:
 - **A clear explanation** of your project.
 - A description of the **methodologies used** (with references if applicable).
 - **The results obtained.**
 - A discussion of the **successes, limitations**, and overall conclusions of your analysis.

- **Methodological Flexibility:**

You are free to use **any approach**. The use of **combined or hybrid methods** will be particularly valued.

- **Submission Guidelines:**

When sending your submission by email:

- The **email subject line** must be:

"Python Final Project Submission – [Names of Group Members]"

- Both the **Python** and **PDF** files must be named using the **first and last names of all group members, separated by underscores between members, but no underscore between first and last names**.

Example: `John Doe_Jane Smith_Alex Brown.py` and `John Doe_Jane Smith_Alex Brown.pdf`

Objectives of the project

- Develop autonomy and critical thinking in multiple data analysis
- Ability to formulate a complex problem
- Ability to display the visualization of complex results
- Use a variety of approaches in data analysis: sophistication will not necessarily provide the best results
- The top two or three groups will be selected to present their approach and their results