

# Quantitative Portfolio Management

## Assignment #1

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November 2023

## Instructions for each assignment . . . I

- ▶ Assignment #1 should be done individually.
- ▶ The other assignments are to be done in **groups of 4 or 5 students**.
  - ▶ This means that groups of 1, 2, 3, 6, etc. are **not** allowed.
  - ▶ **Diversity in groups is strongly encouraged**  
(people from different countries, different genders, different finance knowledge, and different coding ability, etc.)

## Instructions for each assignment . . . II

- ▶ Each assignment should be emailed as a **Jupyter file**
  - ▶ To [Raman.Uppal@edhec.edu](mailto:Raman.Uppal@edhec.edu)
  - ▶ The subject line of the email should be: "QPM: Assignment  **$n$** ," where  $n = \{1, 2, \dots, 8\}$ .
  - ▶ Assignment  **$n$**  is due **before** Lecture  **$n$** , where  $n = \{1, 2, \dots, 8\}$ .
  - ▶ Assignments submitted **late** will **not** be accepted (grade = 0), so please do not email me assignments after the deadline.

## Instructions for each assignment . . . III

- ▶ The Jupyter file should include the following (use Markdown):
  - ▶ Section “0” with information about your submission:
    - ▶ Line 1: QPM: Assignment  $n$
    - ▶ Line 2: Group members: listed alphabetically by last name, where the last name is written in CAPITAL letters
    - ▶ Line 3: Any comments/challenges about the assignment
  - ▶ Section “ $k$ ” where  $k = \{1, 2, \dots\}$ .
    - ▶ First type Question  $k$  of Assignment  $n$ .
    - ▶ Then, below the question, provide your answer.
    - ▶ Your code should include any packages that need to be imported.

# Questions for Assignment 1

- ▶ Consider a single risky asset (e.g., the market) whose initial price is EUR 100. Suppose that the returns of this asset have a Normal distribution with a mean of 10% and volatility of 20% *per year*.
  - Q1.1 Use Python to generate random **annual** returns for 100 years for this asset. Compare the annual mean and volatility of returns from your random data to the true 10% mean and 20%.
  - Q1.2 Now, generate random **monthly** returns for 100 years for this risky asset. Compare the **annual** mean and volatility of returns from your random data to the true 10% mean and 20%.
  - Q1.3 Finally, generate random **daily** returns for 100 years for this risky asset. Compare the **annual** mean and volatility of returns from your random data to the true 10% mean and 20%.
  - Q1.4 What do you conclude from the results of the three previous questions?

End of questions