

- Faculté des sciences économiques
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Portfolio Optimization (5AF2023)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Master en finance	Cours: 2 ph	écrit: 2 h	3
Master en statistique	Cours: 2 ph	écrit: 2 h	3

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Automne

Equipe enseignante:

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Objectifs:

This course examines portfolio theory from a practitioner's perspective. We build on Markowitz Mean-Variance theory, and then take the point of view of a portfolio manager who is willing to put the model into practice. We first show with concrete examples that this theory cannot be applied straightforwardly to "real-life" portfolios. Conventional Markowitz optimization often returns portfolios with little investment intuition and is extremely sensitive to parameters' estimation. The student knows and is able to use different methods proposed in the literature to overcome these problems. Factor models, the Ledoit and Wolf's estimator of the covariance matrix, the Michaud's "resampled efficient frontier", or the Black and Litterman model belong to the covered material. Heuristics and Risk-Based approaches are also discussed.

Contenu:

1. Markowitz Mean-Variance Theory
2. How Well Does Markowitz Work in Practice?
3. A First Step Towards Practical Implementation: Factor Models and Averaging Techniques
4. Robust Estimation: the Variance-Covariance Matrix
5. Robust Estimation: the Vector of Expected Returns
6. Michaud: "Efficient Asset Management"
7. The Black-Litterman Asset Allocation Model.
8. Heuristics and Risk-Based Investing

Forme de l'évaluation:

Project: 80%, exercises: 20%.
Re-take session: 2-hour written exam (100%).

Neither documents nor connected devices are permitted during the exams.
In case of violation of these rules, the students are in a situation of fraud and the unauthorized items will be removed. The exam could be deemed as failed.

Documentation:

Reilly F. and K. Brown, Investment Analysis and Portfolio Management, 10th edition, Thomson.
Elton E., M. Gruber, S. Brown and W. Goetzmann, Modern Portfolio Theory and Investment Analysis, 9th edition, Wiley.

Pré-requis:

None. However, basic knowledge of the Matlab software is highly recommended.

Forme de l'enseignement:

Lectures: 2 hours per week.

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