



Université Paris-1 *Panthéon-Sorbonne*

ADVANCED QUANTITATIVE PORTFOLIO MANAGEMENT
Masters 2 Professionnel (MoSEF & IRFA) and Master 2 Recherche (MBF)

Academic Year 2009-2010
(First Semester)

Advanced Quantitative Portfolio Management

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Seminar Objective

The objective of this course is to undertake a rigorous presentation of concepts and approaches in quantitative portfolio management. After establishing foundations of the Modern Portfolio Theory, we will focus on its extensions and applications. At completion of this course, students will be able to: understand how financial markets value securities, apply portfolio theory for building efficient portfolios, perform market research and security valuation, measure portfolio performance and manage a portfolio given specific risk parameters and provided quantitative constraints. The course objective is achieved through a combination of lectures, practical exercises, case studies and presentations by practitioners.

Time: Wednesday 5:00PM-7:00PM; **Location:** 114 (MSE); **First day of the course:** 14th, October 2009; **Length:** 10 seminars of two hours; **Exam:** Two-hour written test (mid January 2010).

Table of Contents

General Introduction

Part 1. The Mean-Variance Analysis

- 1 Theoretical Foundations of the Mean-variance Portfolio Analysis
2. Efficient Portfolios, Characteristics and Properties
3. Investor's Choice: Mean-Variance Utility Maximisation
4. Implementing Mean-variance Portfolio Analysis

Part 2. Extensions of the Mean-Variance Portfolio Analysis

1. Alternative Paradigms of the MV Optimisation
2. Alternative Expected Returns
3. Alternative Risk Measures and Moment Estimators
4. Estimation and Model Risk Reduction Techniques

Part 3. The Capital and Arbitrage Asset Pricing Models and their Applications

1. A General Asset Pricing Model
2. Standard Version of the CAPM and Extensions
3. CAPM Empirical Tests and Limits

4. The Arbitrage Pricing Theory

Part 4. *In-Situ* Visit by Professionals

1. Portfolio Manager – Profile of a Fund Manager & Management Process

2. Quant Strategist – Strategic Committee

3. Risk Manager – Risk Committee

4. Bank Economist – Macro Perspectives & News Flows

Complementary lecture documents 1: Structured Management Techniques

Complement lecture documents 2: Performance Measures

Essential References

- Bodie Z., A. Kane and A. Marcus, (2009), *Investments*, 8th Edition, 1024 pages.
- Elton E., M. Gruber, S. Brown and W. Goetzmann, (2003), *Modern Portfolio Theory and Investments Analysis*, John Wiley and Sons, 6th Edition, 702 pages.
- Meucci A., (2005), *Risk and Asset Allocation*, Springer, 532 pages.
- Lee W., (2000), *Theory and Methodology of Tactical Asset Allocation*, Frank J. Fabozzi Associates, 149 pages.
- Litterman B., (2003), *Modern Investment Management: An Equilibrium Approach*, John Wiley and Sons, 702 pages.
- Sherer B. and D. Martin, (2005), *Introduction to Modern Portfolio Optimization*, Springer, 405 pages.

Lecturers

Dr. Christophe M. Boucher

Christophe is a Lecturer in Economics and Finance at the University of Paris-1, Economist/Strategist within AAAadvisors-QCG (ABN AMRO) and Senior Partner at Variances. He received a PhD in Economics in 2006 ("Misalignments, Aggregated Returns and Aggregated Volatility"). He has published several comments in newspapers and articles in academic journals such as *Economics Letters*, *Finance*, *International Journal of Finance*, *Applied Economics Letters* and serves as a referee in several international leading journals. His interest mainly concerns strategic allocation, predictability of returns and volatility, asset pricing and macroeconomics. He received the "Young Economist Award" in 2006 from the European Economic Association.

Dr. Bertrand B. Maillet

Bertrand is a Reader in Financial Economics at the University of Paris-1, an Executive Head of Research within AAAadvisors-QCG (ABN AMRO) and Principal at Variances. He is graduated in Economics, in Finance and in Statistics, and holds a PhD in Economics ("Market Efficiency and Performance Measurements") from the University of Paris-1 (*Panthéon-Sorbonne*). His domain of expertise covers risk management, performance measurement, portfolio management and asset pricing. He has published several articles in academic journals such as *Quantitative Finance*, *Review of International Economics* and *The European Journal of Finance*, chapters in books edited by *Wiley*, *Springer* and *Kluwer Academics*, and serves as a referee in several international leading journals. He is also currently researcher at the CES/CNRS (Center for National Research) at the University of Paris-1 and a Fellow Academic at Europlace Institute of Finance.