UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Risk Management

2425-2-F8204B036-F8204B036M

Learning objectives

The purpose of the course is introducing students to the modern theory of financial risk and to the main risk measures, with special emphasis on numerical applications.

Contents

Introduction to risk and uncertainty; the efficient frontier; risk measures; backtests; copulas.

Detailed program

1. Risk and return: general introduction and different definitions of the rate of return;
2. The mean-variance model: the construction of effficient portfolios with two risky assets and general properties;
3. Efficient frontier and the CAPM: costruction of the effiicet frontier in the general case; properties of the market portfolio and market line;
4. Efficient frontier with portfolio constraints: short-selling constraints and other trading restrictions; their ipact on the efficient frontier;
5. Definitions of risk measures: coherent properties of risk measures and their interpretation;
6. Main risk measures: Value-at-Risk, Expected Shortfall and EVaR; spectral measures; main properties of each measure;
7. Numerical implementation: how to write functions to compute risk measures;
8. Backtests: how to run a test on the performance of the risk measures; conditional tests;
9. Copulas: the role of covariances and the method of copulas.

Prerequisites

Courses on R programming, Financial theory and Statistics.

Teaching methods

Traditional computer aided lectures (36 hours) and classes (6 hours). No on-line teaching

Assessment methods

Numerical exercises with PC. The student is presented a list of 5/6 problems covering all topics of the course and which require to answer with numerical elaborations at the PC. The student may be required to write an ad hoc new function in R in order to solve some of the problems.

Textbooks and Reading Materials

Teaching notes

Semester

First semester

Teaching language

Italian (English)

Sustainable Development Goals

QUALITY EDUCATION