QUANTITATIVE PORTFOLIO MANAGEMENT

TOPICS OF THE COURSE:
The aim of the course is to provide a broad introduction to the theory and practice of quant portfolio management.

1. Introduction to quant-investing:
• relative vs absolute return
• main steps
a. defining the investment universe
b. estimating signals and risks
c. portfolio construction
d. implementation and execution
e. risk monitoring
2. Practical issues in defining the investment universe (eg presence of traded, liquid instruments)
3. Common statistical properties of financial data and their impact on modeling
4. Portfolio construction:
a. single period vs multi-period
b. ad hoc method (eg EW, market cap)
c. Markowitz mean variance paradigm
d. benchmarking (or not)
e. extensions
i. multiperiod optimization
ii. incorporating higher moments
iii. transaction costs
5. Common signals' extraction techniques – a non-exhaustive overview:
a. qualitative signals (multicriteria analysis, strategist/experts' opinions)
b. econometric macro/fundamental models
c. econometric time series models
d. momentum techniques
e. fundamental screens
f. follower's techniques (e.g. hedge funds replicas)
g. top-down methods vs bottom-up methods
6. Risk of signals:
a. sample estimators (conditional vs unconditional)
b. estimation error vs specification errod: the error maximization issue
c. making portfolio construction more robust
i. shrinkage estimators
ii. Bayesian techniques (eg Black-Litterman)
iii. smart use of constraints
iv. resampling techniques
7. Implementation issues:
a. backtesting
b. risk of overfitting/data snooping
c. model risk reduction (eg multi-strategy approach)
d. data and sources

READING LIST:
A good introductory reading is: Scherer, B., "Portfolio Construction and Risk Budgeting", Risk Books (last edition).

- Portfolio Construction and Risk Budgeting (3rd ed) (Hardcover)
by Bernd Scherer
Publisher: Risk Books; 3rd Revised Edition edition (31 Mar 2007)
- Bayesian Methods in Finance (Frank J. Fabozzi Series) (Hardcover)
by Svetlozar T. Rachev, John S. J. Hsu, Biliana S. Bagasheva, Frank J. Fabozzi
Publisher: John Wiley & Sons (11 Mar 2008)
- Risk and Asset Allocation (Springer Finance) (Hardcover)
by Attilio Meucci
Publisher: Springer; 1st ed. 2005. Corr. 3rd printing edition (1 Jun 2005)

A selection of papers will be distributed during the lectures.