

**A course on  
Quantitative Financial Risk**

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## **Outline**

The implementation of sound quantitative risk models is a vital concern for all financial institutions. This course provides a comprehensive treatment of the theoretical concepts and modeling techniques. The course is mainly focused on volatility (univariate and multivariate) modeling and their use in financial practice. Volatilities are used for risk management, portfolio choice, Value at Risk, intraday trading analysis, and correlations and tail dependencies between asset's returns.

## **Contents**

1. Econometric refreshments
2. Basis of time series analysis
3. What is volatility? Why is it useful?
4. The GARCH model
5. Volatility and i) risk premia and ii) good and bad news.
6. Value at Risk
7. Intraday volatility and estimating daily volatilities with intraday data
8. Conditional correlations 1
9. Conditional correlations 2
10. Multivariate nonlinear dependencies
11. Extreme market movements : tail dependence

## **Practice**

All lectures are accompanied with computer practice in Eviews with real stock returns.

## **References**

The reference books are *Asset Price, Dynamics, Volatility and Prediction* by Stephen Taylor (Princeton University Press), *Anticipating Correlations: A New Paradigm for Risk Management* by Robert F. Engle (Princeton University Press) and *Quantitative Risk Management* by Alexander McNeil, Rudiger Frey and Paul Embrechts (Princeton University Press).

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