

A BENCHMARK APPROACH TO QUANTITATIVE FINANCE

Abstract: This one day workshop introduces into the benchmark approach, which provides a general framework for financial market modelling. It allows for a unified treatment of derivative pricing, portfolio optimization and risk management. It extends beyond the classical asset pricing theories, with significant differences emerging for long dated derivative products and risk measures. The Law of the Minimal Price will be presented for derivative pricing. A Diversification Theorem allows forming a proxy for the numeraire portfolio. The richer modelling framework of the benchmark approach leads to the derivation of tractable, realistic models under the real world probability measure. It will be explained how the approach differs from the classical risk neutral approach. Examples on long term and extreme maturity derivatives demonstrate the important fact that a range of contracts can be less expensively priced and hedged than suggested by classical theory.

Main Topics:

- Financial modelling using the numeraire portfolio
- Deriving the Law of the Minimal Price
- Approximating the numeraire portfolio via diversification
- Consistent utility maximization and portfolio optimization
- Pricing nonreplicable claims consistently as an investment
- Pricing and hedging long term and extreme maturity contracts.

Presenter: Professor Eckhard Platen holds a Chair in Quantitative Finance at the University of Technology in Sydney. Prior to this appointment he was the Founding Head of the Centre for Financial Mathematics at the Institute of Advanced Studies at the Australian National University in Canberra. He has authored more than 150 articles in quantitative finance and applicable mathematics, and is the co-author of three books on Numerical Methods for Stochastic Differential Equations. Core ideas from the fourth Springer book, Platen/Heath: A Benchmark Approach to Quantitative Finance. Springer Finance (2010), ISBN 3-540-26212-1, will be presented and expanded during the workshop.