OMI Mini-Course Announcement

Robust hedging with given option prices: the Skorokhod embedding approach

Dates:

Mon 13 January 2014 – 10:00-12:00
Tues 14 January 2014 – 10:00-12:00
Wed 15 January 2014 – 10:00-12:00

Location:

AHL Lecture Theatre, 3rd Floor, Oxford-Man Institute, Eagle House,
Walton Well Road, Oxford OX2 6ED

Lecturer:

Alexander Cox (University of Bath)

Course Overview:

Classically, the process of pricing and hedging options begins by supposing the existence of some underlying probabilistic model, and one aims to produce conclusions which hold under the supposed model. In practice, modelling is hard, and markets regularly make even the most carefully calibrated models look ridiculous. An alternative approach is to try and produce conclusions which hold for a wide class of models — such methods are called robust.

In the classical setting, market information is usually incorporated through calibration, however with robust methods, there is typically no single class of models to which one can calibrate. As an alternative, one might assume that a given set of options are traded, and use these as components in a hedging strategy. A natural assumption is to assume that call prices for a fixed maturity and multiple strikes are observed. Intuitively, this suggests the law of the asset at a fixed time under the risk neutral measure is fixed, and using time-change techniques, one can connect the set of possible models with solutions to the Skorokhod embedding problem. As a result, many robust option hedging problems can be reformulated as optimal Skorokhod embedding problems.

In this course we will give an overview of the optimal Skorokhod embedding approach to robust hedging problems, covering the beautiful probabilistic ideas which underpin the theory of Skorokhod embeddings, and describe how these ideas can be used to construct robust hedges of a variety of options, including Lookback-type options and options on variance. Additional aspects which we hope to discus will include connections to RFBSDEs, and numerical aspects of the computation of barriers.

Registration for this event is free to University of Oxford Postgraduate Students and Faculty, OMI Associates and Members.

For more information and to register, email events@oxford-man.ox.ac.uk

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