Dynamic Models for Volatility and Heavy Tails

Course Information

Date: Tuesday 17th December 2013

Location: Cass Business School, London

Lecturer: Andrew Harvey, FBA, Professor of Econometrics, Cambridge University

This one day course will introduce a new approach to time series modelling, based on Dynamic Conditional Score (DCS) models. These models are particularly important for modelling volatility. The main applications are in financial econometrics, but some of the techniques are also relevant to macroeconometrics.

Course Outline

The lectures are bases on a new book, Dynamic Models for Volatility and Heavy Tails, published by CUP in June, 2013 as an Econometric Society monograph. The course content is as follows.

1)   a. Introduction. Models for changing scale and location. GARCH and EGARCH. Dynamic conditional score (DCS) models.

   b. Gamma and beta distributions and their relation to Student's t and the general error distribution. Maximum likelihood estimation of DCS models.

2)   a. Dynamic location. Outliers and robustness. Trend and seasonality. Smoothing.

   b. Dynamic volatility. Beta-t-EGARCH models. Leverage effects. Long memory and components. Application to stock returns.

3)   a. Location/scale models for non-negative variables. Application to intra-day data.

   b. Multivariate models. Changing location, scale and correlation. Dynamic copulas.

Further Information

Further information, including a link to the first chapter of the book and a website for DCS models, can be found at
http://www.econ.cam.ac.uk/faculty/person.html?id=harvey&group=faculty

Another name for DCS models is GAS models, where GAS stands for Generalized Autoregressive Score; see the website managed by Andre Lucas and Siem Jan Koopman at the Free University of Amsterdam: http://gasmodel.com