Dynamic Models for Volatility and Heavy Tails
Andrew Harvey, Faculty of Economics, Cambridge University

Abstract
The volatility of financial returns changes over time and, for the last thirty years, Generalized Autoregressive Conditional Heteroscedasticity (GARCH) models have provided the principal means of analyzing, modeling and monitoring such changes. Taking into account that financial returns typically exhibit heavy tails, a small but radical change in the way GARCH models are formulated leads to a resolution of many of the theoretical problems inherent in the statistical theory as well as providing a better fit to the data.

The new volatility models belong to a more general class of Dynamic Conditional Score (DCS) models. These models extend to the robust modeling of outliers in the levels of time series and to the treatment of time-varying parameters in regression models and copulas.

For details on DCS models and a new CUP book, see:
www.econ.cam.ac.uk/DCS