Yield Curves and Risk Neutral Densities – a Functional Time Series Approach

Rong Chen*
Rutgers University, Piscataway, USA – rongchen@stat.rutgers.edu

Modelling the dynamic behaviour of yield curves and risk neutral densities is an important topic in finance, as interest rate modelling and option pricing are two of the most important quantitative tools for financial engineering and risk management. We model the yield curves and risk neutral densities are functional time series – a sequence of functional or distributions observed over time. Their dynamics is modelled through a driving latent process. Statistical inference is based on Sequential Monte Carlo method. Empirical results will be presented to demonstrate the properties of the proposed approach.

Keywords: State Space Models; Sequential Monte Carlo; Prediction; Threshold Models.