

Threshold estimation of jump-diffusion models and interest rate modelling

Abstract:

We introduce nonparametric estimators of the coefficients of a univariate jump-diffusion process when observations are recorded discretely. We allow the drift, diffusion and intensity function to be level dependent. We also show that the estimator of the diffusion coefficient is consistent even if the jump process has infinite activity. Our results rely on the fact that it is possible to disentangle the discontinuous part of the state variable through those squared increments between observations exceeding a suitable threshold. We use our estimators to re-examine the estimation of models for the short interest rate. With respect to alternative estimates, the proposed threshold estimators provide narrower confidence intervals and, in some cases, very different results from those in the literature.