MINIMUM DISTANCE ESTIMATION OF HIGH FREQUENCY TRANSACTION DATA

Mauricio Zevallos

Universidade Estadual de Campinas, Brasil

Resumen

The modeling of durations, defined as the time between consecutive financial transactions, has been received much attention in statistics and financial econometrics. In the literature, several duration models have been proposed. In the Stochastic Conditional Duration (SCD) model the evolution of the durations is assumed to be driven by a latent factor. The purpose for the use of the latent variable is that it captures the unobservable information flow on the market. However, the SCD model has no closed form for its likelihood and hence the maximum likelihood estimation method is difficult to implement. In this paper a Minimum Distance Estimation (MDE) method for SCD models is presented. The MDE method is based on the minimization of the distance between sample and population autocorrelations. The main advantage of this method is that it allows for a computationally efficient estimation in which the precision of the estimates can be easily calculated. Monte Carlo experiments indicate that the proposed estimator performs very well even for time series with million observations. In addition, the methodology is illustrated with the analysis of high frequency transaction data.