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Title:

Modelling and Forecasting with Logarithmic Autoregressive Conditional Duration Models: A Comparative Study with an Application *

Abstract:

Autoregressive conditional duration (ACD) models play an important role in financial modeling. Maximum Likelihood (ML) and Quasi maximum likelihood (QML) methods are widely used for parameter estimation in the model class. This paper presents an alternative approach of parameter estimation of logarithmic ACD (Log-ACD) models using on the theory of Estimating Functions (EF). Theoretical results for the EF estimators are derived and a simulation study is conducted to compare the performance of the EF estimates with corresponding ML and QML estimates. It is argued that the EF estimates are relatively easier to evaluate and have sampling properties closely comparable with those of ML and QML methods. We illustrate all these methods by applying to a real financial duration data set. Our results show that Log-ACD (1,1) give relatively smaller variation in forecast errors compared to Linear ACD (1,1), regardless of the method of estimation. In addition, the Diebold-Mariano (DM) and superior predictive ability (SPA) tests have been applied and shown that there are no significant differences in forecast ability for all models and methods.

*This is joint work with K.H. Ng (the University of Malaya) and Richard Gerlach (The University of Sydney)