Capturing Daily Heterogeneity
in Intra-Daily Durations Time Series:
the Mixed Autoregressive Conditional
Duration Model

Christian T. Brownlees[*]   Marina Vannucci[†]

Abstract

Standard intra-daily duration analysis assumes that diurnally adjusted durations revert around a unique mean level. Such an assumption may be too stringent as these series can exhibit evidence of different *daily* mean reversion levels. For instance, trading can on average be slower on days following holidays and can be faster on macro announcements days. In this work we propose a novel three component model that consists of a daily random effect, a semiparametric time-of-day effect and a dynamic inter-duration component: the Mixed Autoregressive Conditional Duration (MACD) model. The random effects captures heterogeneity in daily mean reversal. A Bayesian formulation of the model allows for inference using MCMC techniques. An application on General Electric stock data illustrates the usefulness of such an approach in empirical applications.

[*]Department of Finance, Stern School of Business, New York University, e-mail: ctb@stern.nyu.edu

[†]Department of Statistics, Rice University, e-mail: marina@rice.edu