



The University of Chicago  
Department of Statistics

MASTER'S THESIS PRESENTATION

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**An ACD-ECOGARCH(1,1) Model for Irregular Time  
Spaced Ultra-high-frequency Data**

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110 Eckhart Hall, 5734 S. University Avenue

**ABSTRACT**

In this paper we introduce the method of ACD-ECOGARCH(1, 1) model. An exponential autoregressive conditional duration model is used to describe the dependence structure in durations of ultra-high-frequency financial data.

The innovation process of the ACD model then defines the interarrival times of a compound Poisson process. We use this compound Poisson process as the background driving Levy process of an exponential continuous time GARCH(1, 1) process.

The dynamics of the random time transformed log-price process are then described by the latter process. To estimate its parameters we construct a quasi maximum likelihood estimator under the assumption that all jumps of the log-price process are observable. Finally, the model is fitted to IBM tick-by-tick data of the New York Stock Exchange