



The University of Chicago
Department of Statistics

MASTER'S THESIS PRESENTATION

FENGWAN WANG

Department of Statistics
The University of Chicago

**Adaptive Pointwise Estimation
of the Largest Interval of Homogeneity
in Conditional Heteroscedasticity Models**

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110 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

Market and institutional changes have long been causing structural breaks in financial time series, and a growing amount of statistical research has been devoted to modeling and locating these structural breaks. This paper explores testing and locating multiple volatility change points in financial time series in the special case of GARCH estimation. With the assumption that a time series can be locally approximated by a parametric model, the method is based on an adaptive pointwise selection of intervals and iteratively extending and testing for their homogeneity until a structural break is found or data exhausted. This proposed method is investigated by a simulation study and is also applied to stock-index series to compare its performance with the standard parametric GARCH model. The empirical application to real data gives clear evidence of the fast pace of change in the data. One of the straightforward conclusions of our study is that modeling long return series with only one GARCH model is not adequate and accurate enough. The parameters of the model must be updated and the paper proposes a method to detect the change when the update is needed.

Information about building access for persons with disabilities may be obtained in advance by calling Sandra Romero at 773.702-0541 or by email (sandra@galton.uchicago.edu).