



BOSTON UNIVERSITY STATISTICS
AND PROBABILITY SEMINAR SERIES

**Semiparametric Estimation of GARCH
Models**

Jianing Di

Department of Mathematics and Statistics
Boston University

Thursday, September 27, 2007, 4:00-5:00pm

Mathematics and Computer Science (MCS) Building, Room 149
111 Cummington Street, Boston

Tea and Cookies at 3:30pm in MCS 153

Abstract: Over the last twenty years there has been considerable research on the so-called generalized autoregressive conditional heteroscedastic (GARCH) models. Different maximum likelihood methods for fitting the GARCH model to financial data based on various assumptions on the error distribution had been studied in the literature leading to a significant understanding of the properties of such estimators. One difficulty of implementing a fully parametric MLE for the estimation of GARCH model is the usual lack of complete knowledge of the error distribution for real financial data. Although, it is possible to get a reasonable understanding of the underlying volatility of financial data even under the misspecification of the error distribution, still it is too optimistic to expect any parametric estimator based on an assumed error model to be fully efficient. In this talk I will propose a new semiparametric estimator of GARCH model that allows more flexibility than fully parametric models. The estimation is carried out via a pseudo-likelihood approach, and we show that the proposed estimator is consistent and asymptotically normal with an asymptotic variance-covariance matrix identical to that of the true MLE. Issues related to the efficiency of semiparametric estimators in GARCH models will also be discussed.