For Favour of Posting

THE CHINESE UNIVERSITY OF HONG KONG

Department of Statistics

will present a seminar entitled

Power comparisons of nonparametric likelihood-based tests for stationary processes

by

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on

Tuesday, 19 February 2008
2:00pm – 3:00pm

in

Lady Shaw Building C5
The Chinese University of Hong Kong

Abstract:

This talk discuss the second order power properties of Cressie-Read power-divergence (CR) statistic (Baggerly, 1998) for stationary processes. CR statistic includes many important test statistics such as empirical likelihood and Kullback-Leibler statistic etc. Therefore the theory of estimation and test based on empirical likelihood is greatly extended.

Since its introduction by Owen (1988, 1990), empirical likelihood has become a useful tool for nonparametric inference. It is well known that the empirical likelihood ratio statistic inherits a number of properties of the parametric likelihood ratio statistic. Owen has shown that the empirical likelihood ratio statistic has limiting chi-squared distribution. Qin and Lawless (1994) connected the theories of empirical likelihood and general estimating equations. Hence using empirical likelihood ratio statistics it is possible to obtain tests and confidence regions for awide range of problems, including linear models (Owen, 1991). Another property of empirical likelihood which also resembles that of a parametric likelihood is Bartlett correction; see for example Hall and La Scala (1990) for the case of the mean parameters, DiCiccio, et al (1991) for the case of smooth functions of means, Chen (1993, 1994) for linear regression model, Chen and Cui (2006) in the presence of nuisance parameters. Bravo (2003) compares the secondorder power properties of the class of CR tests. Then it is shown that the empirical likelihood test is optimal in the sense of the local maximinity (Mukerjee, 1994).

For dependent data, Monti (1997) applied the empirical likelihood approach to the derivative of the Whittle likelihood. Kitamura (1997) considered blockwise empirical likelihood ratios based on data blocks rather than individual observations. Recently, Nordman and Lahiri (2006) introduced a version of empirical likelihood based on the periodogram and spectral estimating equations. They elucidated the asymptotic properties of frequency domain empirical likelihood for linear processes exhibiting both short- and long-range dependence.

In this talk we develop CR statistic approach in the frequency domain. Especially we compares the second-order power properties of the class of CR tests. To this purpose, we introduce a class of bias corrected CR tests. Then it is shown that optimal properties are strongly affected by the estimating function. For the estimating function of the type in Monti (1997), it is shown that the empirical likelihood ratio test enjoys an optimality property in terms of local maximinity. However, for the estimating function of the type in Nordman and Lahiri (2006), it is shown that the empirical likelihood ratio test is not optimal in the same sense.

All are Welcome