Cyprus University of Technology

Department of Commerce, Finance and Shipping

Seminars on 27, 30 & 31 August, 2012

Monday August 27, 10:10 – 11:10
(Demetra, Amathus Beach Hotel)

"Accurate Robust Inference"

by

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Abstract

Classical statistics and econometrics typically rely on assumptions on the structural and the stochastic parts of the model and on optimal procedures derived under these assumptions. Standard examples are least squares estimators in linear models and their extensions, maximum likelihood estimators and the corresponding likelihood-based tests, and GMM techniques in econometrics. Inference is typically based on approximations obtained by standard first-order asymptotic theory. However, in the presence of small deviations from the assumed model, this can lead to inaccurate p-values and confidence intervals. Moreover, when the sample size is moderate to small or even in large samples when probabilities in the tails are required, first-order

asymptotic analysis is often too inaccurate. We review a class of techniques which combine robustness and good accuracy in finite samples. They are derived using saddlepoint methods and provide robust tests for testing hypotheses on the parameters and for overidentification which are second-order correct in terms of relative error. Their nonparametric versions are particularly appealing as they are linked to empirical likelihood methods, but exhibit better accuracy than the latter in finite samples even in the presence of model misspecifications. The theory is illustrated in several important classes of models, including linear and generalized linear models, quantile regression, composite likelihood, functional measurement error models, and indirect inference in diffusion models.

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