Joint Statistics Seminar

The Hong Kong University of Science and Technology

Model Averaging Methods for Instrumental Variable Estimation

by

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Time: 3:00 p.m. - 4:00 p.m.
Venue: Room 2302 (Lift 17/18)

Abstract

It has been observed that instrumental variable estimators may behave poorly in the presence of many instruments. This paper considers model averaging methods for solving the "many instruments" problem. In the two stage least squares estimation, the first step is to construct predicted values of the endogenous variables based on the least squares estimates of the regression of the endogenous variables on a set of instruments. We propose averaging across least squares predictions of the endogenous variables obtained from many different choices of instruments. In the second stage, we regress the dependent variable on the average predicted values of the endogenous variables. Our procedure is a generalization of existing methods for solving the "many instruments" problem such as Donald and Newey's (2001) selection method, Okui's (2005) shrinkage method and Kuersteiner's (2000, 2001) kernel weighted GMM; these existing methods can be understood as model averaging methods with some restriction on the form of the weights for averaging. The weights for averaging are chosen to minimize the asymptotic mean square error, which can be done by solving a standard quadratic programming problem and is easy to implement. A Monte Carlo study shows that the model averaging method works as well, and often outperforms the existing methods.

All interested are welcome!
For details, please contact ISMT Department.