MORE@DIAG

Management, Operations Research and Economics Seminar

Monday, 2 March 2020

11:00

Aula Magna

Via Ariosto, 25

Roma

Nonparametric Estimation of Efficiency in the Presence of Environmental Variables

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In this seminar, we will present the

Web of Science Highly Cited Paper Daraio, C., Simar, L., & Wilson, P. W. (2018). Central limit theorems for conditional efficiency measures and tests of the 'separability' condition in non-parametric, two-stage models of production. *The Econometrics Journal*, 21(2), 170-191.

Abstract

In this paper, we demonstrate that standard central limit theorem (CLT) results do not hold for means of nonparametric, conditional efficiency estimators, and we provide new CLTs that permit applied researchers to make valid inference about mean conditional efficiency or to compare mean efficiency across groups of producers. The new CLTs are used to develop a test of the restrictive 'separability' condition that is necessary for second-stage regressions of efficiency estimates on environmental variables. We show that if this condition is violated, not only are second-stage regressions difficult to interpret and perhaps meaningless, but also first-stage, unconditional efficiency estimates are misleading. As such, the test developed here is of fundamental importance to applied researchers using nonparametric methods for efficiency estimation. The test is shown to be consistent and its local power is examined. Our simulation results indicate that our tests perform well both in terms of size and power. We provide a real-world empirical example by re-examining the paper by Aly et al. (1990, Review of Economics and Statistics 72, 211-18) and rejecting the separability assumption implicitly assumed by Aly et al., calling into question results that appear in hundreds of papers that have been published in recent years.

After that, we will introduce recent challenges and work in progress.
Joint work with Cinzia Daraio and Paul W. Wilson.

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