Department SEMINARS

Efficient estimation of regression models with spillovers: flexible parametric and semi-parametric approaches

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+ Online via Teams

A B S T R A C T

In this presentation, we explore alternative methods for efficiently fitting regression models with spillover effects, which cannot typically be handled by ordinary least squares because of the simultaneity caused by interactions between individuals. Common estimation methods, such as two-stage least squares, generalized method of moments, or (quasi)maximum likelihood, are widely used but may not be the most efficient except in some specific cases. To address this, we propose two approaches, both based on Le Cam's local asymptotic normality (LAN) theory but differing in how they handle the error distribution. The first is a semiparametrically efficient estimator based on residual ranks and signs that requires only strong unimodality of the error distribution. The second is a parametric estimator designed to account for skewness and heavy tails, using flexible distributions such as Tukey's g-and-h and Pewsey and Jones' sinh-arcsinh. Both estimators perform well in Monte Carlo simulations, frequently outperforming commonly used estimators. Finally, we demonstrate the practical implications of our approach with a trade regression from Behrens et al. (2012), illustrating how empirical results can change significantly when Gaussian assumptions are relaxed.

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