國 立 中 央 大 學

統 計 研 究 所

學 術 演 講

時　　間：106 年 5 月 23 日（星期二）第一場 10:00 ~ 10:50、第二場 11:00 ~ 11:50
地　　點：中央大學鴻經館 M429 室
茶　　會：上午 9:30 ~ 10:00　　地　　點：鴻經館 510 室

主　講　人：Dr. Zheng Zhang（Institute of Statistics and Big Data, Renmin University of China）

第一場講題：Simple and Efficient Population Causal Inference

ABSTRACT

The estimation of average treatment effects based on observational data is extremely important in practice and has been studied by generations of statisticians under different frameworks. Existing globally efficient estimators require non-parametric estimation of a propensity score function, an outcome regression function or both, but their performance can be poor in practical sample sizes. Without explicitly estimating either function, we consider a wide class of calibration weights constructed to attain an exact three-way balance of the moments of observed covariates among the treated, the control and the combined group. The wide class includes exponential tilting, empirical likelihood and generalized regression as important special cases, and extends survey calibration estimators to different statistical problems and with important distinctions. Global semiparametric efficiency for the estimation of average treatment effects is established for this general class of calibration estimators. The results show that efficiency can be achieved by solely balancing the covariate distributions without resorting to direct estimation of the propensity score or outcome regression function. We also propose a consistent estimator for the efficient asymptotic variance, which does not involve additional functional estimation of either the propensity score or the outcome regression functions. The variance estimator proposed outperforms existing estimators that require a direct approximation of the efficient influence function.

主　講　人：翁新傑 博士生（中央大學統計學研究所）

第二場講題：Marketability and Discrete Options with Jump Risk

ABSTRACT

The research of Longstaff (1995) paved the way for a new wave of ``how marketability affect security values'' study. Longstaff (1995) adopted the pricing formula of a lookback put derived just under Black-Scholes economy. His model has been widely used to study the value of marketability of a security, and has good empirical supports. However, it is puzzled why a such simple model can work so well, especially it ignores many practical features. In this paper, we address two of them: discrete monitoring and jump risk. We provide a general framework of approximating discrete monitoring options with jump risk, by extending the Keener's approach from diffusion models to jump diffusion models. To conclude, we find that the discrete monitoring and the jump risk each has significant impacts on the model. And it has an interesting phenomenon between the two effects. This study may be of importance in explaining the Longstaff's model is still reasonably good, as well as in proving empirical researches with a better understanding of how jump risk and discrete monitoring drive discount for marketability restriction.

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