DOUBLY ROBUST UNIFORM CONFIDENCE BAND FOR THE CONDITIONAL AVERAGE TREATMENT EFFECT FUNCTION

SOKBAE LEE\textsuperscript{1,2}, RYO OKUI\textsuperscript{3,4}, AND YOON-JAE WHANG\textsuperscript{1}

ABSTRACT. In this paper, we propose a doubly robust method to present the heterogeneity of the average treatment effect with respect to observed covariates of interest. We consider a situation where a large number of covariates are needed for identifying the average treatment effect but the covariates of interest for analyzing heterogeneity are of much lower dimension. Our proposed estimator is doubly robust and avoids the curse of dimensionality. We propose a uniform confidence band that is easy to compute, and we illustrate its usefulness via Monte Carlo experiments and an application to the effects of smoking on birth weights.

Keywords: average treatment effect conditional on covariates, uniform confidence band, double robustness, Gaussian approximation.

\textsuperscript{1}\textsc{Department of Economics, Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul, 151-742, Republic of Korea.}
\textsuperscript{2}\textsc{Centre for Microdata Methods and Practice, Institute for Fiscal Studies, 7 Ridgmount Street, London, WC1E 7AE, UK.}
\textsuperscript{3}\textsc{Institute of Economic Research, Kyoto University, Yoshida-Honmachi Sakyo, Kyoto, 606-8501, Japan.}
\textsuperscript{4}\textsc{Department of Econometrics & OR, VU University Amsterdam, De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands.}

E-mail addresses: sokbae@snu.ac.kr, okui.ryo.3@gmail.com, whang@snu.ac.kr.
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