Rejoinder of "Estimating structured high-dimensional covariance and precision matrices: Optimal rates and adaptive estimation"[*]

T. Tony Cai

Department of Statistics, The Wharton School, University of Pennsylvania, Philadelphia, PA 19104, USA
e-mail: tcai@wharton.upenn.edu

Zhao Ren

Department of Statistics, University of Pittsburgh, Pittsburgh, PA 15260, USA
e-mail: zren@pitt.edu

and

Harrison H. Zhou

Department of Statistics, Yale University, New Haven, CT 06511, USA
e-mail: huibin.zhou@yale.edu

1. Introduction

We are deeply grateful to the discussants for providing constructive and stimulating comments and suggestions. Our paper gives a survey of recent optimality and adaptivity results on estimating various families of structured covariance and precision matrices in the high-dimensional setting, with a focus on understanding the intrinsic difficulty of the problems. To achieve this goal, we present main results under relative simple and unified assumptions, and hence do not address some practical issues. Several such questions are raised by the discussants, including robustness to outliers, Gaussian assumption, estimation with missing data, estimation with time-dependent observations, alternative bandwidth selection, and hybrid procedures for estimating precision matrices. In this rejoinder we comment on these important points and remark on some challenges that lie ahead.

---

[*]Main article 10.1214/15-EJS1081.