Supplementary File to The Finite Sample Properties of Sparse M-estimators with Pseudo-Observations

Benjamin Poignard · Jean-David Fermanian

Abstract This supplementary material contains the figure illustrating the consistency patterns for the mixture of copula models. The simulation setting corresponds to Section 4.

Benjamin Poignard

Osaka University, Graduate School of Economics, 1-7, Machikaneyama, Toyonaka-Shi, Osaka-Fu, 560-0043, Japan.

E-mail: poignard@sigmath.es.osaka-u.ac.jp   (corresponding author)

Jean-David Fermanian

Ensae-Crest, 5 avenue Henry le Chatelier, 91129 Palaiseau, France.

E-mail: jean-david.fermanian@ensae.fr

 Proposed running title: Non-convex M-estimation with pseudo-observations.

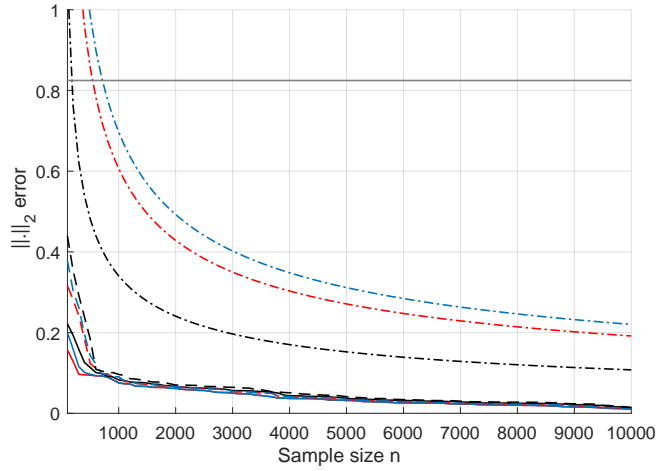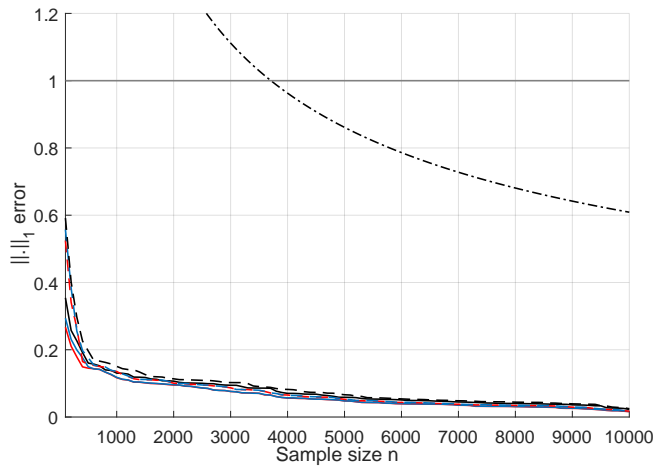**Empirical study: consistency patterns corresponding to Section 4**

(a) $\|.\|_2$-consistency

(b) $\|.\|_1$-consistency

Fig. 1: Statistical consistencies in the $\|.\|_2, \|.\|_1$ senses of the sparsity based estimator of mixtures of copula models. SCAD, MCP and Lasso results are represented in red, blue and black respectively. The case $\boldsymbol{U}$ (resp. $\hat{\boldsymbol{U}}$) is represented in solid (resp. dashed) line. Each point represents an average of 200 trials for each sample size. $\|\theta_0\|_2$ is represented by the gray horizontal solid line. The theoretical upper bounds are represented in dashed-dotted lines for the known marginal case and for SCAD (red), MCP (blue) and Lasso (black).