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## Convergence rate results for some empirical Bayes estimators

*Roxana Ciumara, roxana\_ciumara@yahoo.com*

Department of Mathematics. Calea Dorobantilor 15-17. Academy of Economic Studies, Bucharest. 010572 Romania.

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### Abstract

The problem of asymptotic optimality and convergence rates for empirical Bayes estimators of some parameters was studied by different authors. Using a quadratic loss function, Liang [2] proved that, under certain conditions, the empirical Bayes estimator of the scale parameter in Pareto distribution is asymptotically optimal. Huang and Liang [1] analyzed the empirical Bayes estimator of the truncation parameter of truncated distribution family under asymmetric Linex loss. Later, Shi et al. [3] derived the convergence rate of empirical Bayes estimator for two-dimensional truncation parameters under Linex loss.

In this paper we evaluate the empirical Bayes estimators of the parameters of some truncated-type distributions, considering different classes of loss functions. We find the Bayes estimator and empirical Bayes estimator for the parameter taken into account. We establish conditions for asymptotic optimality and derive the associated rate of convergence to optimal risk. Finally, we consider a special case when the prior distribution is of a certain form.

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### References

- [1] Huang, S.Y., Liang, T.C. (1997). *Empirical Bayes estimation of the truncation parameter with Linex loss*. Statistica Sinica, 7, 755-769.
- [2] Liang, T.C. (1993). *Convergence rates for empirical Bayes estimation of the scale parameter in a Pareto distribution*. Computational Statistics and Data Analysis, 16, 35-45.
- [3] Shi, Y., Gao, S., Shi, X. (2005). *Convergence rate of empirical Bayes estimation for two-dimensional truncation parameters under Linex loss*. Information Science, 171, 1-11.