

TWO-SAMPLE PROBLEMS IN STATISTICAL DATA MODELLING

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Owen ([2], [3]) introduced the empirical likelihood method for statistical inference. This method as shown by many researchers is appealing especially for constructing confidence intervals or bands (see LaScala 1990, Owen 2001). Recently the empirical likelihood method has been proposed for the two-sample problems in a general framework (see [4]). Among them most important are probability-probability (P-P) plots, quantile-quantile (Q-Q) plots, receiver operating characteristic (ROC) curves, mean and quantile differences of two samples, structural relationship models. P-P and Q-Q plots serve as a basic tool for a statistician to check graphically the distribution of data. Simultaneous confidence bands added to these plots make it possible to do goodness of fit testing by eye (see [4]). ROC curves are of great importance and have been used in signal theory, psychology, radiology, medicine etc.

In this paper we analyse pointwise interval coverage accuracy by Monte Carlo simulations for P-P, Q-Q and ROC curves. We compare our results with the empirical coverage accuracy from the asymptotical behavior of the appropriate empirical processes.

In [1] simultaneous confidence bands for ROC curves have been derived using the smoothed bootstrap method. It is straightforward to prove that the bootstrap method works also for P-P and Q-Q plots. Finally, we construct simultaneous bands for P-P and Q-Q plots of real data example using both the empirical likelihood and smoothed bootstrap method.

REFERENCES

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