ON THE DERIVATIVES OF THE TRIMMED MEAN

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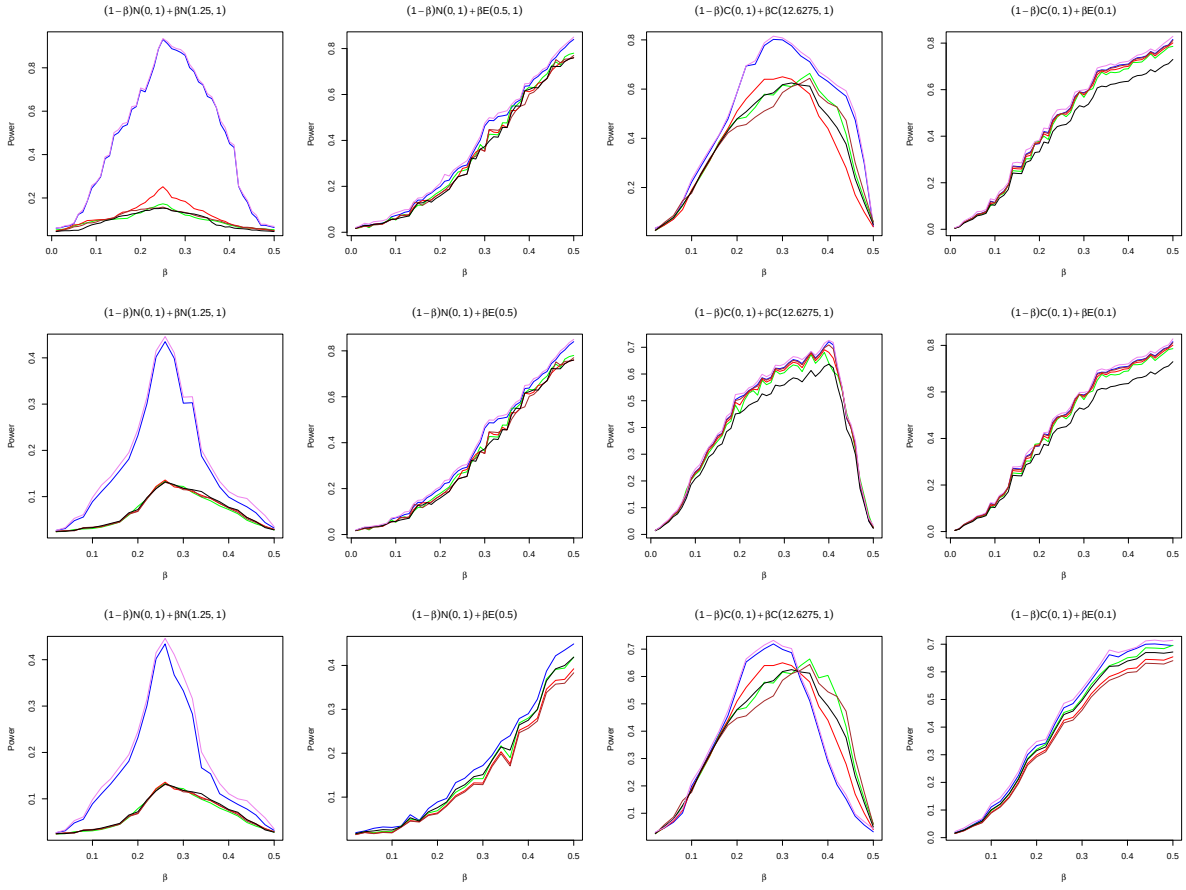
Supplementary materials

6. Powers of tests and M.S.E. of estimates

We have computed empirical power of different tests at 5% and 1% nominal levels, for different values of contamination proportion with sample sizes 50 and 100, when data follow different contamination models. In Figure 6.1, the *blue* curve is the power curve of our test (using adaptive choice of bandwidth), the *violet* curve is the maximum power curve over different choices of bandwidths, the *green* curve is the power curve of the test considered in Mira (1999), the *red* curve is the power curve of the test considered in Csorgo and Heathcote (1987), the *brown* curve is the power curve of J_{2n} test in Ahmad and Li's (1997), and the *black* curve is the power curve of the test considered in Schuster and Barker (1987).



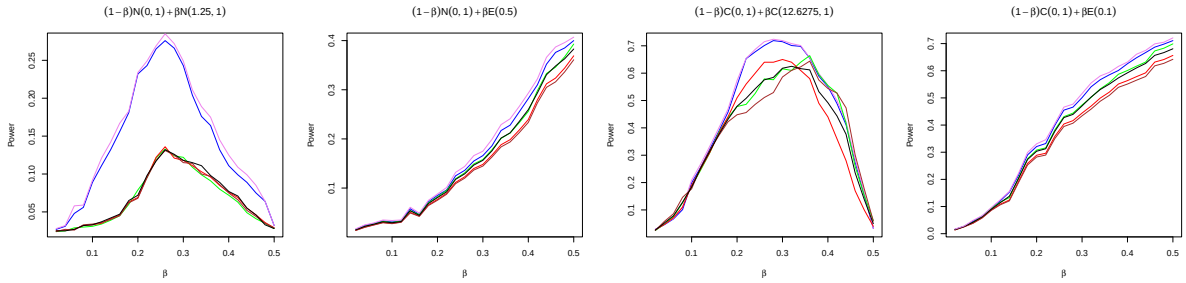
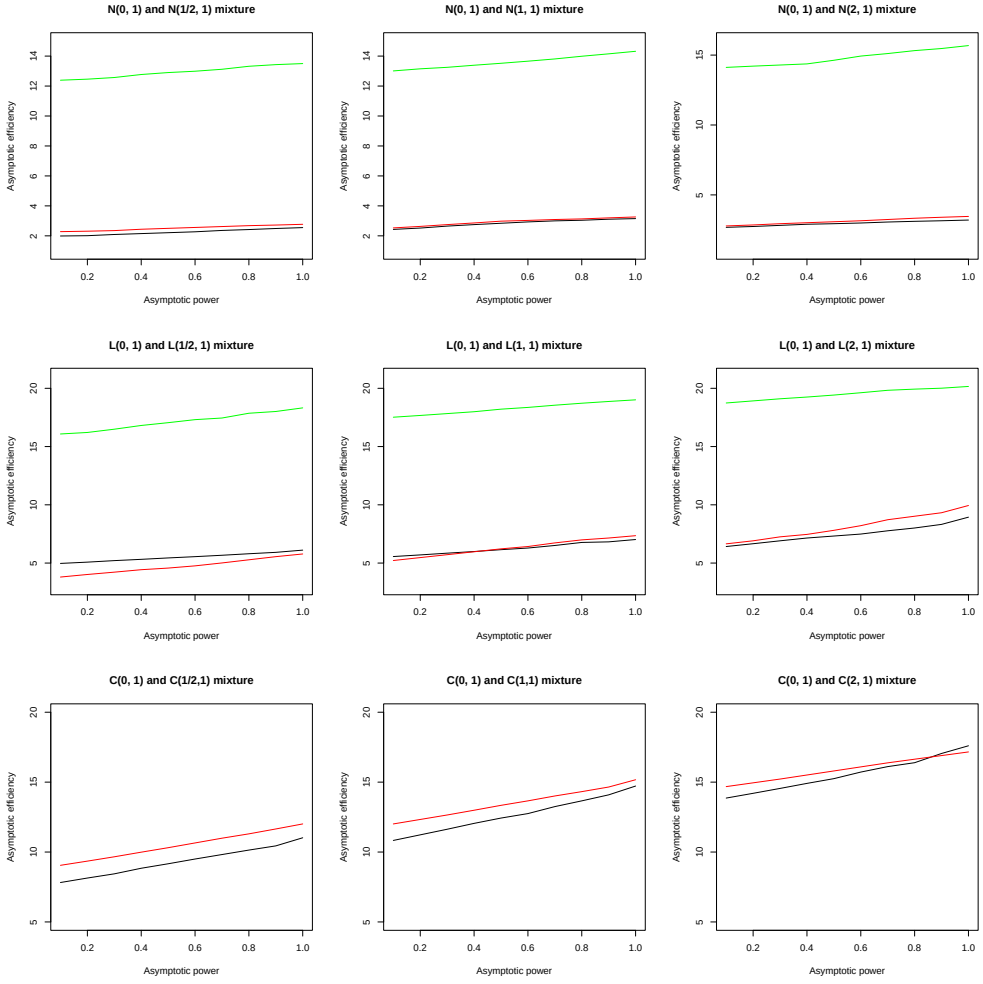


Figure 6.1: Graphs of empirical powers of different tests. The first row (5% lavel) and the second row (1% lavel) of graphs are based on sample size 100, while the third row (5% lavel) and the fourth row (1% lavel) are based on sample size 50.

We next report some results related to asymptotic power study carried out in Section 2.4. We have computed Pitman efficacy of our test relative to the tests considered in Mira (1999), Csorgo and Heathcote (1987), and Schuster and Barker (1987), and the results are summarized in the graphs in Figure 6.2. The *green*, the *red* and the *black* curves denote the Pitman efficacies of our test relative to the tests considered in Mira (1999), Csorgo and Heathcote (1987), and Schuster and Barker (1987), respectively.



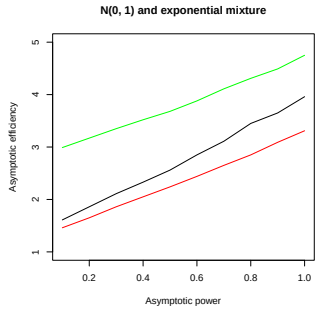


Figure 6.2: Graphs of Pitman efficacies of our test relative to other tests at 5% nominal level for different values of asymptotic power.

0.1 Performance of $\hat{\beta}$

Here we present the graphs of the efficiencies of the estimates based on E.M. algorithm and Newton-Raphson method relative to our estimate. The *green*, *blue* and *red* curves denote the efficiencies corresponding to $\Delta_{H,G} = 10\%$, 15% and 20%, respectively throughout this section.

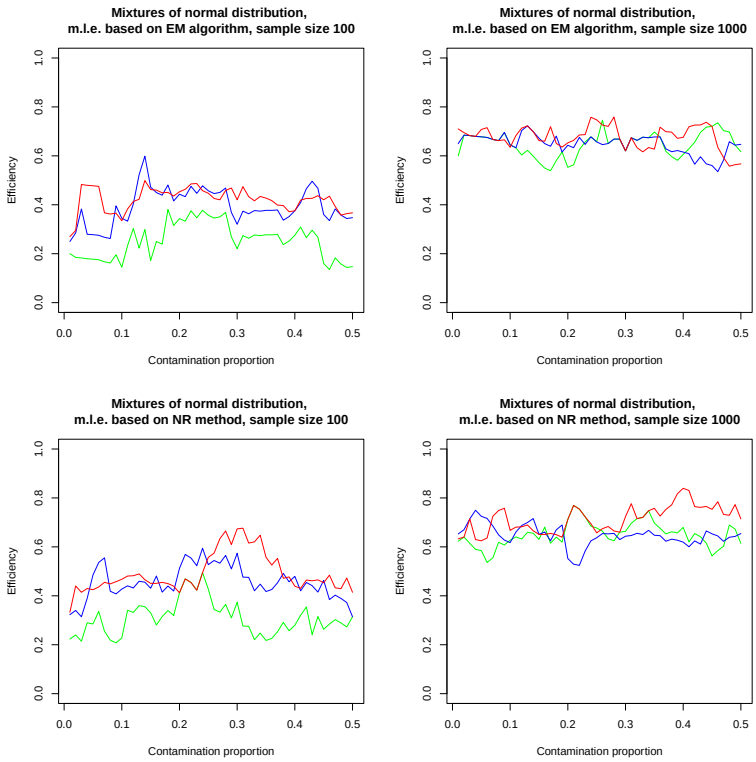


Figure 6.3: Graphs of the efficiencies of the estimates when data are generated from mixtures of normal distributions with sample sizes 100 and 1000.

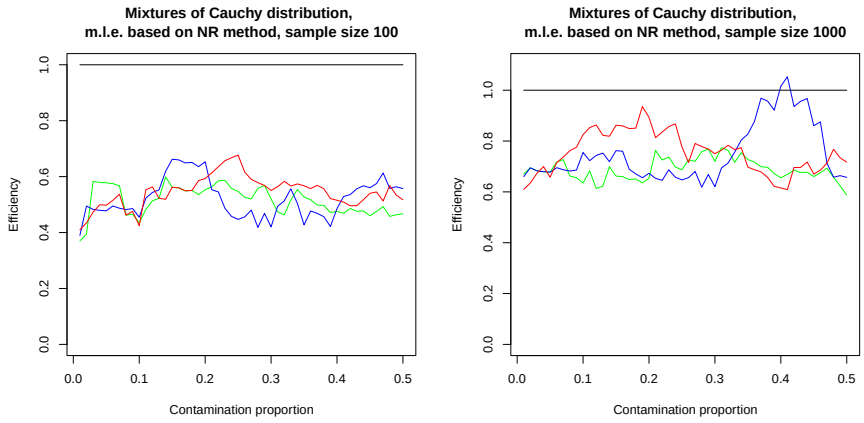


Figure 6.4: Graphs of the efficiencies of the estimates when data are generated from mixtures of Cauchy distributions with sample sizes 100 and 1000.

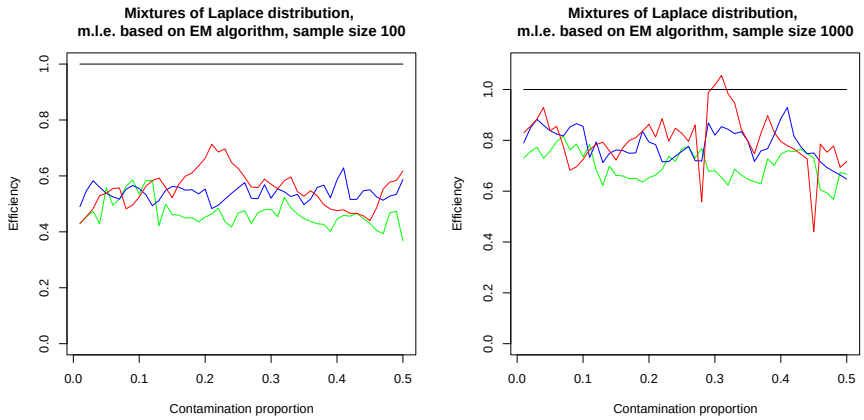


Figure 6.5: Graphs of the efficiencies of the estimates when data are generated from mixtures of Laplace distributions with sample sizes 100 and 1000.