Inference for the Mean in the Heavy-Tailed Case

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Abstract:

In this article, asymptotic inference for the mean of i.i.d. observations in the context of heavy-tailed distributions is discussed. While both the standard asymptotic method based on the normal approximation and Efron's bootstrap are inconsistent when the underlying distribution does not possess a second moment, we propose two approaches based on the subsampling idea of Politis and Romano (1994) which will give correct answers. The first approach uses the fact that the sample mean, properly standardized, will under some regularity conditions have a limiting stable distribution. The second approach consists of subsampling the usual t-statistic and is somewhat more general. A simulation study compares the small sample performance of the two methods.