M-ESTIMATION FOR LINEAR REGRESSION WITH INFINITE VARIANCE

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Abstract: The limiting behavior of M-estimates for a linear model when the regressors and/or errors have heavy tailed distributions is given. By *heavy tail* we mean that the distribution is in the domain of attraction of a non-normal stable distribution or, equivalently, that the tail probabilities are regularly varying at infinity with exponent $\alpha \in (0, 2)$. These results are applicable to both least squares and least absolute deviation estimators. The limiting distribution of the minimum dispersion estimate is also derived and its performance is compared with that of the M-estimate.

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