

# Monte Carlo-based tail exponent estimator

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## Extended Abstract

In this paper we propose a new approach to estimation of the tail exponent in financial stock markets. We begin the study with the finite sample behavior of the Hill estimator under  $\alpha$ -stable distributions. Using large Monte Carlo simulations we show that the Hill estimator overestimates the true tail exponent and can hardly be used on samples with small length. Utilizing our results, we introduce a Monte Carlo-based method of estimation for the tail exponent. Our proposed method is not sensitive to the choice of tail size and works well also on small data samples. The new estimator also gives unbiased results with symmetrical confidence intervals. Finally, we demonstrate the power of our estimator on the international world stock market indices. On the two separate periods of 2002–2005 and 2006–2009 we estimate the tail exponent.

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