

A class of new tail index estimators

Vygantas Paulauskas¹ · Marijus Vaičiulis²

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Abstract In the paper, we propose a new class of functions which is used to construct tail index estimators. Functions from this new class are non-monotone in general, but they are the product of two monotone functions: the power function and the logarithmic function, which play essential role in the classical Hill estimator. The newly introduced generalized moment ratio estimator and generalized Hill estimator have a better asymptotic performance compared with the corresponding classical estimators over the whole range of the parameters that appear in the second-order regular variation condition. Asymptotic normality of the introduced estimators is proved, and comparison (using asymptotic mean square error) with other estimators of the tail index is provided. Some preliminary simulation results are presented.

Keywords Tail index estimation · Hill-type estimators · Heavy tails

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✉ Vygantas Paulauskas
vygantas.paulauskas@mif.vu.lt
Marijus Vaičiulis
marijus.vaiciulis@mii.vu.lt

¹ Department of Mathematics and Informatics, Vilnius University, Naugarduko st. 24, 03225 Vilnius, Lithuania

² Institute of Mathematics and Informatics, Vilnius University, Akademijos st. 4, 08663 Vilnius, Lithuania