

On a new class of tests for the Pareto distribution using Fourier methods

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Abstract. We propose new classes of tests for the Pareto type I distribution using the empirical characteristic function. These tests are U and V statistics based on a characterisation of the Pareto distribution involving the distribution of the sample minimum. In addition to deriving simple computational forms for the proposed test statistics, we prove consistency against a wide range of fixed alternatives. A Monte Carlo study is included in which the newly proposed tests are shown to produce high powers. These powers include results relating to fixed alternatives as well as local powers against mixture distributions. The use of the proposed tests is illustrated using an observed data set.

Keywords: Empirical characteristic function; Goodness-of-fit testing; Pareto distribution; V and U statistics

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