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Abstract : In this article, we propose the median-of-means type nonparametric estimator for S-Gini index by using the idea of grouping under the massive data framework, which has been widely used in economics, finance, and insurance. Under certain condition on the growing rate of the number of subgroups, the consistency and asymptotic normality of proposed estimator are investigated. Furthermore, we construct a new method to test S-Gini index based on the empirical likelihood method for median. Our method avoids any prior estimate of variance structure of proposed estimator, which is difficult to estimate and often causes much inaccuracy. Numerical simulations and a real data analysis are designed to show the performance of our estimator. It is shown that the new proposed estimator is quite robust with respect to outliers.

Key words : Empirical likelihood , Hypothesis test, Massive data, Median-of-means, S-Gini index

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