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## Jackknife Empirical Likelihood Methods for Gini Correlations and their Equality Testing

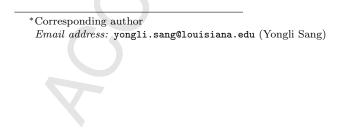
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## Abstract

The Gini correlation plays an important role in measuring dependence of random variables with heavy tailed distributions, whose properties are a mixture of Pearson's and Spearman's correlations. Due to the structure of this dependence measure, there are two Gini correlations between each pair of random variables, which are not equal in general. Both the Gini correlation and the equality of the two Gini correlations play important roles in Economics. In the literature, there are limited papers focusing on the inference of the Gini correlations and their equality testing. In this paper, we develop the jackknife empirical likelihood (JEL) approach for the single Gini correlation, for testing the equality of the two Gini correlations, and for the Gini correlations' differences of two independent samples. The standard limiting chi-square distributions of those jackknife empirical likelihood ratio statistics are established and used to construct confidence intervals, rejection regions, and to calculate *p*-values of the tests. Simulation studies show that our methods are competitive to existing methods in terms of coverage accuracy and shortness of confidence intervals, as well as in terms of power of the tests. The proposed methods are illustrated in an application on a real data set from UCI Machine Learning Repository.

*Keywords:* Jackknife empirical likelihood, Gini correlation, *U*-statistics, Wilks' theorem, Test 2010 MSC: 62G35, 62G20



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