



Testing overidentifying restrictions on high-dimensional instruments and covariates

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Abstract

The validity of instruments plays a crucial role in addressing endogenous treatment effects and instruments that violate the exclusion restriction are invalid. This paper concerns the overidentifying restrictions test for evaluating the validity of instruments in the high-dimensional instrumental variable model. We confront the challenge of high dimensionality by introducing a new testing procedure based on U -statistic. Our procedure allows the number of instruments and covariates to be in exponential order of the sample size. Under some mild conditions, we establish the asymptotic normality of the proposed test statistic under the null and local alternative hypotheses. The effectiveness of the proposed method is clearly supported by simulations and its application to a real dataset on trade and economic growth.

Keywords Computationally efficient · High dimensionality · Overidentification testing · U -statistic

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