# Bootstrap enhanced model specification testing

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**Abstract**

This paper proposes a bootstrap method to enhance the performance of the information matrix test, and more in general of the score test. The information matrix test is a model specification test proposed by White (1982). The standard bootstrap method is to use the bootstrap distribution of the test statistic to obtain a critical value which is more accurate than the asymptotic critical value. However, the score test uses a quadratic form statistic. In the construction and implementation of such a quadratic form statistic two important aspects which determine the performance of the test (both under the null and the alternative), are (i) the weighting matrix (the estimate of the variance matrix) and (ii) the critical value. In this paper the bootstrap is used to get simultaneously a better variance matrix estimate and accurate critical values. The information matrix test is studied in some Monte Carlo experiments.

**Keywords:** parametric bootstrap, score test

**JEL:** C12, C15

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