Horowitz, Joel L.; **Spokoiny, Vladimir G.**

An adaptive, rate-optimal test of a parametric mean-regression model against a nonparametric alternative. (English) Zbl 1017.62012

Econometrica 69, No. 3, 599-631 (2001).

Summary: We develop a new test of a parametric model of a conditional mean function against a nonparametric alternative. The test adapts to the unknown smoothness of the alternative model and is uniformly consistent against alternatives whose distance from the parametric model converges to zero at the fastest possible rate. This rate is slower than $n^{-1/2}$. Some existing tests have nontrivial power against restricted classes of alternatives whose distance from the parametric model decreases at the rate $n^{-1/2}$.

There are, however, sequences of alternatives against which these tests are inconsistent and ours is consistent. As a consequence, there are alternative models for which the finite-sample power of our test greatly exceeds that of existing tests. This conclusion is illustrated by the results of some Monte Carlo experiments.

MSC:

62F03 Parametric hypothesis testing
62G10 Nonparametric hypothesis testing
62G20 Asymptotic properties of nonparametric inference
62P20 Applications of statistics to economics

Full Text: DOI