A Uniform Model Selection Test for Semi/Nonparametric Models *

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Abstract

This paper proposes a new model selection test for the statistical comparison of semi/nonparametric models based on a general quasi-likelihood ratio criterion. An important feature of the new test is its uniformly exact asymptotic size in the overlapping nonnested case, as well as in the easier nested and strictly nonnested cases. The uniform size control is achieved without using pre-testing, sample-splitting, or simulated critical values. We also show that the test has nontrivial power against all $\sqrt{n}$-local alternatives and against some local alternatives that converge to the null faster than $\sqrt{n}$. Finally, we provide a framework for conducting uniformly valid post model selection inference for model parameters. The finite sample performance of the uniform test and that of the post model selection inference procedure are illustrated in a mean-regression example by Monte Carlo.

JEL Classification: C14, C31, C32

Keywords: Asymptotic Size, Post Model Selection Inference, Semi/Nonparametric Models, Model Selection Test

1 Introduction

Model selection is an important issue in many empirical work. For example, in economic studies, there are often competing theories for one phenomenon. Even when there is only one theory, it

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