

Robust Likelihood-Ratio Tests for Incomplete Economic Models*

Hiroaki Kaido[†] Yi Zhang[‡]

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Abstract

This paper develops a framework for testing hypotheses on structural parameters in incomplete models. Such models make set-valued predictions and hence do not generally yield a unique likelihood. The model structure, however, allows to construct tests based on least favorable pairs (LFPs) of likelihoods using the theory of Huber and Strassen (1973). Building on this, we develop tests that are robust to the incompleteness and possess certain optimality properties. We also show that the sharp identifying restrictions play a key role in constructing such tests in a computationally tractable manner. Combining our results with Le Cam's limits of experiments, we further provide a framework for analyzing the asymptotic power of tests against properly defined local alternatives. Examples of hypotheses we consider include those on the presence of strategic interaction effects in discrete games of complete information. Monte Carlo experiments demonstrate robust performance of our tests.

[Preliminary and Incomplete.]

Keywords: Incomplete models, Robust inference, Likelihood-ratio tests, Limits of experiments.

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[†]Boston University, Email: hkaido@bu.edu. Financial support from NSF grants SES-1357643 and SES-1824344 is gratefully acknowledged.

[‡]Jinan University, Email: yalezhan@bu.edu