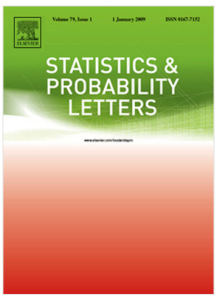
Accepted Manuscript



Empirical likelihood ratio tests with power one

Albert Vexler, Li Zou

PII: S0167-7152(18)30189-5
DOI: https://doi.org/10.1016/j.spl.2018.05.008
Reference: STAPRO 8243

To appear in: *Statistics and Probability Letters*

Received date : 21 December 2017
Revised date : 2 May 2018
Accepted date : 3 May 2018

Please cite this article as: Vexler A., Zou L., Empirical likelihood ratio tests with power one. *Statistics and Probability Letters* (2018), https://doi.org/10.1016/j.spl.2018.05.008

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Empirical likelihood ratio tests with power one

Albert Vexler*, Li Zou

Department of Biostatistics, The State University of New York at Buffalo, NY 14206, USA

ABSTRACT

In the 1970s, Professor Robbins and his coauthors extended the Vile and Wald inequality in order to derive the fundamental theoretical results regarding likelihood ratio based sequential tests with power one. The law of the iterated logarithm confirms an optimal property of the power one tests. In parallel with Robbins's decision-making procedures, we propose and examine sequential empirical likelihood ratio (ELR) tests with power one. In this setting, we develop the nonparametric one- and two-sided ELR tests. It turns out that the proposed sequential ELR tests significantly outperform the classical nonparametric *t*-statistic-based counterparts in many scenarios based on different underlying data distributions.

MSC: 97K70, 62L05, 62G10, 62G20.

Keywords: Empirical likelihood, Law of the iterated logarithm, Power one, *t*-statistic, Vile and Wald inequality, Sequential tests.

1. Introduction

Robbins (1970) as well as Robbins and Siegmund (1970) proposed the parametric likelihood ratio type tests with power one. Towards this end, the classical inequality obtained by Ville (1939) and Wald (1947) was extended to cover cases when the alternative joint density functions have forms of integrated likelihood functions in the context related to Bayes factor type procedures (Vexler and Hutson, 2018: Chapter 8; Vexler et al., 2016a). The extended Vile and Wald inequality was employed to develop probability inequalities based on sums of independent

*Corresponding author.
E-mail addresses: avexler@buffalo.edu (A.Vexler), lizou@buffalo.edu (L. Zou)

Download English Version:

https://daneshyari.com/en/article/7548061

Download Persian Version:

https://daneshyari.com/article/7548061

Daneshyari.com