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Generalized method of trimmed moments[1]

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Abstract

High breakdown-point regression estimators protect against large errors and data contamination. We adapt and generalize the concept of trimming used by many of these robust estimators so that it can be employed in the context of the generalized method of moments. The proposed generalized method of trimmed moments (GMTM) offers a globally robust estimation approach (contrary to many existing locally robust estimators) applicable in models identified and estimated using moment conditions. We derive the consistency and asymptotic distribution of GMTM in a general setting, propose a robust test of overidentifying conditions, and demonstrate the application of GMTM in the instrumental variable regression. We also compare the finite-sample performance of GMTM and existing estimators by means of Monte Carlo simulation.

Keywords: asymptotic normality, generalized method of moments, instrumental variables regression, robust estimation, trimming

1. Introduction

The generalized method of moments (GMM; Hansen, 1982) and related procedures are important tools for estimation and inference in models based on moment conditions. During last two decades, the estimation by GMM has been enhanced in many areas, which include primarily its behavior in small and moderate samples (e.g., Newey and Smith, 2004) and its robustness against small deviations from the assumed model (e.g., Ronchetti and Trojani, 2001; Honore and Hu, 2004). In this paper, we concentrate on the second area and propose the generalized method of trimmed moments that is, contrary to most existing methods, robust to large deviations from the model and that can achieve practically the same variance of

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