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Measurement Errors in Quantile Regression Models[*]

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Abstract

This paper develops estimation and inference for quantile regression models with measurement errors. We propose an easily-implementable semiparametric two-step estimator when repeated measures for the covariates are available. Building on recent theory on Z-estimation with infinite-dimensional parameters, consistency and asymptotic normality of the proposed estimator are established. We also develop statistical inference procedures and show the validity of a bootstrap approach to implement the methods in practice. Monte Carlo simulations assess the finite-sample performance of the proposed methods. We apply the methods to the investment equation model using a firm-level data with repeated measures of investment demand, Tobin's q. We document strong heterogeneity in the sensitivity of investment to Tobin's q and cash flow across the conditional distribution of investment. The cash flow sensitivity is relatively larger at the lower part of the distribution, providing evidence that these firms are more exposed to and dependent on fluctuations in internal finance.

Key Words: Quantile regression; measurement errors, investment equation

JEL Classification: C14, C23, G31

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