

Bias-corrected statistical inference for partially linear varying coefficient errors-in-variables models with restricted condition

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Abstract In this paper, we consider the statistical inference for the partially linear varying coefficient model with measurement error in the nonparametric part when some prior information about the parametric part is available. The prior information is expressed in the form of exact linear restrictions. Two types of local bias-corrected restricted profile least squares estimators of the parametric component and nonparametric component are conducted, and their asymptotic properties are also studied under some regularity conditions. Moreover, we compare the efficiency of the two kinds of parameter estimators under the criterion of Löwner ordering. Finally, we develop a linear hypothesis test for the parametric component. Some simulation studies are conducted to examine the finite sample performance for the proposed method. A real dataset is analyzed for illustration.

Keywords Partially linear varying coefficient model · Errors-in-variables · Local bias-corrected · Restricted estimator · Profile Lagrange multiplier test · Asymptotic normality