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# Estimation of Partial Linear Error-in-Variables Models for Negatively Associated Dependence Data

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## Abstract

Consider the partly linear regression model $Y = x\beta + g(t) + e$ where the explanatory $x$ is erroneously measured, and both $t$ and the response $Y$ are measured exactly, the random error $e$ is negatively associated dependent. Let $\widetilde{x}$ be a surrogate variable observed instead of the true $x$ in the primary survey data. Assume that in addition to the primary data set containing $N$ observations of $\{(Y_j, \widetilde{x}_j, t_j)_{j=n+1}^{n+N}\}$, which is negatively associated data sets, an independent validation data containing $n$ observations of $\{(x_j, \widetilde{x}_j, t_j)_{i=1}^{n}\}$ is available. The exact observations on $x$ may be obtained by some expensive or difficult procedures for only a small subset of subjects enrolled in the study. In this paper, a semiparametric method with the primary data is employed to obtain the estimators of $\beta$ and $g(\cdot)$ based on the least squares criterion with the help of validata data. The proposed estimators are proved to be strongly consistent.

*Keywords:* Partial Linear Model, Validation Data, Negatively Associated Dependent, Strong Consistency.