

## **On a partially linear single-index transformation model and its nonparametric estimation**

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In this paper we considered the nonparametric estimation of the partially linear single-index transformation model, where the transformation function, single-index function and error distribution were all completely unknown. We proposed a new incorporated local linear regression estimator for the derivative function of the single-index function. Accordingly by integration we obtained the estimator of the single-index function. Then we proposed a constrained least square estimator for the transformation function, where basis function approximation was employed. Asymptotical properties of the estimators were established. Simulation studies show that our proposed estimators worked well. A real-world data analysis of total health care charges was used to illustrate the proposed procedure.

**KEY WORDS:** Basis function; Cross validation; Linear inequality restriction; Local linear regression.