

## Varying coefficients partially linear models with randomly censored data

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**Abstract** This paper considers the problem of estimation and inference in semiparametric varying coefficients partially linear models when the response variable is subject to random censoring. The paper proposes an estimator based on combining inverse probability of censoring weighting and profile least squares estimation. The resulting estimator is shown to be asymptotically normal. The paper also proposes a number of test statistics that can be used to test linear restrictions on both the parametric and nonparametric components. Finally, the paper considers the important issue of correct specification and proposes a nonsmoothing test based on a Cramer von Mises type of statistic, which does not suffer from the curse of dimensionality, nor requires multidimensional integration. Monte Carlo simulations illustrate the finite sample properties of the estimator and test statistics.

**Keywords** Empirical likelihood · Goodness of fit · Kaplan–Meier estimator · Profile least squares · Wilks phenomenon · Wald statistic