Partially linear varying coefficient models with missing at random responses

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Abstract   This paper considers partially linear varying coefficient models when the response variable is missing at random. The paper uses imputation techniques to develop an omnibus specification test. The test is based on a simple modification of a Cramer von Mises functional that overcomes the curse of dimensionality often associated with the standard Cramer von Mises functional. The paper also considers estimation of the mean functional under the missing at random assumption. The proposed estimator lies in between a fully nonparametric and a parametric one and can be used, for example, to obtain a novel estimator for the average treatment effect parameter. Monte Carlo simulations show that the proposed estimator and test statistic have good finite sample properties. An empirical application illustrates the applicability of the results of the paper.

Keywords   Bootstrap · Imputation · Inverse probability weighting ·
Missing at random