Ann Inst Stat Math (2011) 63:267–289
DOI 10.1007/s10463-009-0230-8

Asymptotic properties of conditional quantile estimator for censored dependent observations

Han-Ying Liang · Jacobo de Uña-Álvarez

Received: 12 May 2008 / Revised: 21 January 2009 / Published online: 6 May 2009

Abstract In this paper, we establish strong uniform convergence and asymptotic normality of the conditional quantile estimator for the censorship model when the data exhibit some kind of dependence. It is assumed that the observations form a stationary α-mixing sequence. The strong uniform convergence in iid framework has recently been discussed by Ould-Saïd (Stat Probab Lett 76:579–586, 2006). As a by-product, we also obtain a uniform weak convergence rate for the product-limit estimator of the lifetime and censoring distributions under dependence, which is interesting independently.

Keywords Strong uniform convergence · Asymptotic normality · Censored data · α-mixing sequence · Conditional quantile estimator