On the strong uniform consistency of a conditional mode estimator for randomly left truncated time series

Abdelkader Tatachak_,a, Elias Ould Sa¨ıd b
a) Lab. M.S.T.D, D´epartement de Probabilit´es et Statistique,
Facult´e de Math´ematiques, U.S.T.H.B, Algeria
b)Univ. Lille Nord de France, F-59000, Lille, France, _ U.L.C.O.,
L.M.P.A., F-62228, Calais, France
a_tatachak@hotmail.com

Abstract:

Let $(Y_N)_{N \geq 1}$ denote a sequence of random variables of interest and $(X_N)_{N \geq 1}$ be a sequence of R^d-valued covariates. Let $\Theta(x)$ denote the conditional mode of Y given X= x. In the present paper, we study a kernel conditional mode estimator (say) $\hat{\Theta}_n(x)$ of the conditional mode of a randomly left truncated variable Y. Given a sample (X_i, Y_i), $1 \leq i \leq n$ $(n \leq N)$, of truncated replicates of (X, Y), which fulfill the well-known α mixing condition, the goal is to establish the strong uniform consistency of the proposed estimator $\hat{\Theta}_n(x)$ as well as the convergence rate.
Key words: Kernel conditional mode estimator, Lynden-Bell estimator, random left-truncation model, strong mixing condition, uniform almost sure convergence.
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