

Abstract

For several years, the study of a link between two variables was and still a challenge for a lot of researchers in many fields of application and considering that many of these fields require a wide use of functional data, we find many works have been devoted in this axe. This thesis carry between its covers asymptotic studies of nonparametric estimators of two functions known as among the ways of approaching the prevision problem; the generalised regression function, which is a generalization of the regression function based on the conditional expectation and the conditional quantile. During these studies we have always assumed that the response variable is real and is subjected to a left-truncation while the explanatory variable is functional, i.e with values in a space of infinite dimension. We used a fast functional locally linear modeling for the estimation of the two functions by considering a local linear estimator adapted to a polynomial of one degree. Almost sur pointwise and uniform convergences have been established for each estimator and simulation studies have been carried out to reinforce the efficiency of the proposed estimators.

Key words : Left truncation ; Local linear estimator ; Almost sure convergence ; Functional analysis ; Condiotional quantile ; Regression function.