Quantile Regression Based on A Weighted Approach under Semi-Competing Risks Data

謝進見
中正大學數學系

Abstract

In this article, we investigate the quantile regression analysis for semi-competing risks data in which a non-terminal event may be dependently censored by a terminal event. Due to the dependent censoring, the estimation of quantile regression coefficients on the non-terminal event becomes difficult. In order to handle this problem, we assume Archimedean Copula (AC) to specify the dependence of the non-terminal event and the terminal event. Portnoy (2003) considered the quantile regression model under right censoring data. We extend his approach to construct a weight function, and then impose the weight function to estimate the quantile regression parameter for the non-terminal event under semi-competing risks data. We also prove the consistency and asymptotic properties for the proposed estimator. According to the simulation studies, the performance of our proposed method is good. We also apply our suggested approach to analyze a real data.

Keywords: Copula model; Dependent censoring; Quantile regression; Semi-competing risks data.