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On weighted and locally polynomial directional quantile regression. (English) Zbl 1417.62072

Summary: The article deals with certain quantile regression methods for vector responses. In particular, it describes weighted and locally polynomial extensions to the projectional quantile regression, discusses their properties, addresses their computational side, compares their outcome with recent analogous generalizations of the competing multiple-output directional quantile regression, demonstrates a link between the two competing methodologies, complements the results already available in the literature, illustrates the concepts with a few simulated and insightful examples illustrating some of their features, and shows their application to a real financial data set, namely to Forex 1M exchange rates. The real-data example strongly indicates that the presented methods might have a huge impact on the analysis of multivariate time series consisting of two to four dimensional observations.

MSC:
62G08 Nonparametric regression and quantile regression
62H05 Characterization and structure theory for multivariate probability distributions; copulas
62G20 Asymptotic properties of nonparametric inference

Keywords:
quantile regression; nonparametric regression; multiple-output regression; conditional volatility; multivariate quantile; projection pursuit

Software:
quantreg; Matlab; moQuantile; R; Octave

Full Text: DOI

References:
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