




# Local polynomial expectile regression

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## Abstract

This paper studies local polynomial estimation of expectile regression. Expectiles and quantiles both provide a full characterization of a (conditional) distribution function, but have each their own merits and inconveniences. Local polynomial fitting as a smoothing technique has a major advantage of being simple, allowing for explicit expressions and henceforth advantages when doing inference theory. The aim of this paper is twofold: to study in detail the use of local polynomial fitting in the context of expectile regression and to contribute to the important issue of bandwidth selection, from theoretical and practical points of view. We discuss local polynomial expectile regression estimators and establish an asymptotic normality result for them. The finite-sample performance of the estimators, combined with various bandwidth selectors, is investigated in a simulation study. Some illustrations with real data examples are given.

**Keywords** Asymptotic normality · Bandwidth selection · Expectile regression · Local polynomial fitting · Quantile regression

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