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Wild bootstrap for quantile estimators of linear regression

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The wild bootstrap method is capable of accounting for heteroscedasticity in a regression model. However, the existing theory has focused on the wild bootstrap for linear estimators. In this note, we provide a class of weight distributions that yield asymptotically valid wild bootstrap for linear regression quantile estimators. It is interesting to note that most weight distributions used in the existing wild bootstrap literature lead to biased variance estimates for quantile regression, and that a slight modification of the wild bootstrap procedure admits a broader class of weight distributions. A simulation study is carried out to compare various bootstrap methods and to demonstrate the relevance of our work in finite-sample problems. The wild bootstrap is a preferred resampling method to account for general forms of heteroscedasticity in a regression model with fixed design points.