

QUANTILE AUTOREGRESSION

ROGER KOENKER AND ZHIJIE XIAO

ABSTRACT. Quantile autoregression (QAR) models constitute a class of Markovian models for which the conditional quantile functions of a time series are specified as functions of its observable past. Linear and nonlinear in parameters forms of the QAR model are estimable by conventional quantile regression methods, and thus inherit an inherent robustness. Some basic features of the QAR model will be described including connections to related random coefficient, nonlinear time-series models. Copula models provide a particularly attractive way to generate nonlinear in parameters QAR models. An application to the analysis of the U.S. unemployment rate will be used to illustrate the ability of the models to capture certain features of random walk behavior, while also exhibiting a form of mean reversion.

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Date: February 10, 2004.