Quantile Regression
Copenhagen Short Course: 18-20 May 2016[1]

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Quantile regresson extends classical least squares methods for estimating conditional mean functions by offering a variety of methods for estimating conditional quantile functions, thereby enabling the researcher to explore more thoroughly heterogeneous covariate effects. The course will offer a comprehensive introduction to quantile regression methods and briefly survey some recent developments. The primary reference for the course will be my 2005 Econometric Society monograph, but further readings are suggested below in this course outline.

Course lectures will be complemented by a computationally oriented interlude designed to give students some experience with applications of the methods. This session will be conducted in the open-source R language, and will rely on my `quantreg` package. Thus it would be helpful if students brought laptops equipped with R already installed. R can be freely downloaded for PC/Mac/Linux machines from CRAN: `http://cran.r-project.org/`. The `quantreg` package is also available from CRAN, and can be downloaded using the `install.packages(''quantreg'')` command in its binary form or from source by just clicking on "packages" on the left margin of the CRAN page and following the directions you will find there.

Tentative Topics

(1) The Basics: What, Why and How? Koenker (2005, §1-2), Koenker and Hallock (2001)
(2) Inference and Quantile Treatment Effects Koenker (2005, §3),
(3) Nonparametric Quantile Regression Koenker (2005, §7), Koenker (2010),Belloni and Chernozhukov (2009)
(4) Endogoneity and IV Methods Chesher (2003) Chernozhukov and Hansen (2005) Ma and Koenker (2005)
(5) Censored QR and Survival Analysis Koenker and Geling (2001) Portnoy (2003) Peng and Huang (2008) Koenker (2008)
(6) Quantile Autoregression Koenker and Xiao (2006)
(7) QR for Longitudinal Data Koenker (2004) Galvao (2009)

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(8) Risk Assessment and Choquet Portfolios Bassett, Koenker, and Kordas (2004)
(9) Quantile Regression Computation: From the Inside and Outside Koenker (2005, §6),

References

Bassett, G., R. Koenker, and G. Kordas (2004): "Pessimistic Portfolio Allocation and Choquet Expected Utility," *J. of Financial Econometrics*, 2, 477–92.

Belloni, A., and V. Chernozhukov (2009): "L_1-Penalized Quantile Regression in High-Dimensional Sparse Models," forthcoming *A*nnals of Statistics.

Chernozhukov, V., and C. Hansen (2005): "An IV Model of Quantile Treatment Effects," *Econometrica*, 73(1), 245–261.

Chesher, A. (2003): "Identification in Nonseparable Models," *Econometrica*, 71, 1405–1441.

Galvao, A. (2009): "Quantile Regression for Dynamic Panel Data with Fixed Effects," forthcoming, *J. of Econometrics*.

Koenker, R. (2004): "Quantile Regression for Longitudinal Data," *Journal of Multivariate Analysis*, 91, 74–89.

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Koenker, R., and O. Geling (2001): "Reappraising Medfly Longevity: A quantile regression survival analysis," *J. of Am. Stat. Assoc.*, 96, 458–468.

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Koenker, R., and Z. Xiao (2006): "Quantile Autoregression, with discussion and rejoinder," *J. of Am. Stat. Assoc.*, 96, 980–1006.

Ma, L., and R. Koenker (2005): "Quantile Regression for Recursive Structural Models," *J. of Econometrics*, 134, 471–506.

Peng, L., and Y. Huang (2008): "Survival Analysis with Quantile Regression Models," *J. of Am. Stat. Assoc.*, 103(482), 637–649.

Portnoy, S. (2003): "Censored Quantile Regression," *J. of Am. Stat. Assoc.*, 98, 1001–1012.