

Readings in Advanced Estimation and Inference Methods

The purpose of this course is to study advanced estimation and inference methods that are important for applied research in economics and other social sciences. The class will initially meet every other week during the semester, and participating students may enroll in ECON 9085 or STAT 9100 for one credit. Students should have completed graduate level study of estimation and inference methods at the level of ECON 8472 or STAT 7760.

1. Quasi-maximum likelihood estimation of misspecified models

- Huber, P., “The Behavior of Maximum Likelihood Estimates under Nonstandard Conditions,” *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability, Volume I: Statistics*, University of California Press, Berkeley, CA, 1967, pp. 221–233.
- White, H., “Maximum Likelihood Estimation of Misspecified Models,” *Econometrica*, 50(1982):1–25.
- Gourieroux, C., A. Monfort, and A. Trognon, “Pseudo Maximum Likelihood Methods: Theory,” *Econometrica*, 52(1984):681–700.
- Gourieroux, C., A. Monfort, and A. Trognon, “Pseudo Maximum Likelihood Methods: Applications to Poisson Models,” *Econometrica*, 52(1984):701–720.

2. Quantile regression

- Bassett, G., and R. Koenker, “Asymptotic Theory of Least Absolute Error Regression,” *Journal of the American Statistical Association*, 73(1978):618–622.
- Koenker, R., and G. Bassett, “Regression Quantiles,” *Econometrica*, 46(1978):33–50.

3. Estimation and testing at the boundary of the parameter space

- Andrews, D. W. K., “Estimation when a Parameter is on a Boundary,” *Econometrica*, 67(1999):1341–1383.
- Andrews, D. W. K., “Testing when a Parameter is on the Boundary of the Maintained Hypothesis,” *Econometrica*, 69(2001):683–784.
- Silvapulle, M. J., and P. K. Sen, “Tests on Multivariate Normal Mean,” Chapter 3 in *Constrained Statistical Inference: Inequality, Order, and Shape Restrictions*, John Wiley and Sons, 2005.

4. Issues with multiple hypothesis tests

- Savin, N. E., “Multiple Hypothesis Testing,” Chapter 14 in Griliches, Z., and M. Intriligator, eds., *Handbook of Econometrics, Volume II*, Elsevier Science, 1984.
- Benjamin, Y., and Y. Hochberg, “Controlling the False Discovery Rate: a Practical and Powerful Approach to Multiple Testing,” *Journal of the Royal Statistical Society, Series B*, 57(1995):289–300.

5. Model identification under the alternative hypothesis

- Davies, R., “Hypothesis Testing when a Nuisance Parameter is Present Only Under the Alternatives,” *Biometrika*, 74(1987):33–43.
- Andrews, D. W. K., and W. Ploberger, “Optimal Tests when a Nuisance Parameter is Present Only Under the Alternative,” *Econometrica*, 62(1994):1383–1414.
- Hansen, B., “Inference when a Nuisance Parameter is Not Identified Under the Null Hypothesis,” *Econometrica*, 64(1996):413–430.

6. Two-step estimation methods

- Murphy, K., and R. Topel, “Estimation and Inference in Two-Step Econometric Models,” *Journal of Business and Economic Statistics*, 3(1985):88–97.
- Hardin, J., “The Robust Variance Estimator for Two-Stage Models,” *The Stata Journal*, 2(2002):253–266.
- Hole, A. R., “Calculating Murphy–Topel Variance Estimates in Stata: A Simplified Procedure,” *The Stata Journal*, 6(2006):521–529.

7. Weak instrumental variables

- Staiger, D., and J. Stock, “Instrumental Variables Regression with Weak Instruments,” *Econometrica*, 65(1997):557–586.
- Davidson, R., and J. MacKinnon, “Moments of IV and JIVE Estimators,” working paper, Department of Economics, McGill University, June, 2006.