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IV and GMM under weak instruments

Spring 2011

Course outline

1. The instrumental variables (IV) method
 - Inconsistency of OLS
 - The simple IV estimator
 - The class of IV estimators
 - Sampling properties
 - Estimates of statistical precision
 - Hypothesis testing
 - 2SLS
2. 2SLS under weak instruments
 - Motivating examples
 - Definitions and basic models
 - The bias of 2SLS
 - Standard asymptotic approximations
 - Alternative asymptotic approximations
 - Detecting weak instruments
3. Robust inference under weak instruments
 - Hypothesis testing
 - Confidence sets
 - k -class estimators
 - Bias-corrected estimators
 - Other approaches
 - Practical recommendations
4. The generalized method of moments (GMM)
 - Moment restrictions
 - MM estimators
 - GMM estimators
 - Asymptotic properties
5. Weak identification and robust inference in GMM
 - Definitions
 - Asymptotic approximations
 - Detecting weak identification
 - Robust inference
 - Robust estimators

References

- Angrist J., and Krueger A. (2001) “Instrumental variables and the search for identification: From supply and demand to natural experiment”, *Journal of Economic Perspectives*, 15: 69–85.
- Angrist J.D., and Pischke J.-S. (2008) *Mostly Harmless Econometrics: An Empiricists’s Companion*, Princeton University Press, Princeton.
- Bowden R.J., and Turkington D.A. (1984) *Instrumental Variables*, Cambridge University Press.
- Hall A.H. (2005) *Generalized Method of Moments*, Oxford University Press, Oxford.
- Peracchi F. (2001) *Econometrics*, Wiley, Chichester (UK).
- White H. (2001) *Asymptotic Theory for Econometricians* (2nd ed.), Academic Press, San Diego (CA).
- Wooldridge J.M. (2002) “Applications of generalized method of moments estimation”, *Journal of Economic Perspectives*, 15: 87–100.
- Wooldridge J.M. (2010) *Econometric Analysis of Cross-Section and Panel Data* (2nd ed.), MIT Press, Cambridge (MA).

Suggestions for further reading will be provided in class.