

# Topics in Econometrics: Identification

## Course Outline

March 21, 2016

1. What is identification? Why should we be concerned about identification? What does an identification argument look like?
  - (a) (Ideas in brief) Pages 125 to 127 of Freedman, DA (2009). *Statistical Models: Theory and Practice*. Cambridge University Press.
  - (b) (Overview) Sections 2.1 to 2.5 of Cameron, AC and PK Trivedi (2005). *Microeconomics: Methods and Applications*. Cambridge University Press.
  - (c) (Roots) Chapter 1 of Fisher, FM (1966). *The Identification Problem in Econometrics*. McGraw-Hill Book Company.
  - (d) (Slow food) Lewbel, A (2016). The Identification Zoo – Meanings of Identification in Econometrics. *Journal of Economic Literature*, forthcoming. See <https://www2.bc.edu/~lewbela/identification-zoo-7.pdf>.
2. How can point identification be achieved in standard econometric models?
  - (a) (Parametric models) Section 2.2 of Newey, WK and DL McFadden (1994). “Large Sample Estimation and Hypothesis Testing”. In: *Handbook of Econometrics*. Ed. by RF Engle and DL McFadden. Vol. 4. Handbook of Econometrics. Elsevier. Chap. 36, pp. 2111–2245.
  - (b) (Example) Sections 1 to 5 of Han, S and EJ Vytlacil (2015). Identification in a Generalization of Bivariate Probit Models with Dummy Endogenous Regressors. See [http://sites.google.com/site/universs01/mypdf/ID\\_BVP\\_June9\\_2015.pdf](http://sites.google.com/site/universs01/mypdf/ID_BVP_June9_2015.pdf).
  - (c) (Semiparametric models) Entire Manski, CF (1988). Identification of Binary Response Models. *Journal of the American Statistical Association* **83**.(403), 729–738.
  - (d) (Semiparametric models, examples) Sections 1.1 to 1.3 and 2 of Powell, JL (1994). “Estimation of Semiparametric Models”. In: *Handbook of Econometrics*. Ed. by RF Engle and DL McFadden. Vol. 4. Handbook of Econometrics. Elsevier. Chap. 41, pp. 2443–2521.
  - (e) (Nonparametric models) Sections 1 and 2 of Newey, WK and JL Powell (2003). Instrumental Variable Estimation of Nonparametric Models. *Econometrica* **71**.(5), 1565–1578.

- (f) (Nonparametric models, examples) Entire Matzkin, RL (2007). “Nonparametric Identification”. In: *Handbook of Econometrics*. Ed. by JJ Heckman and EE Leamer. Vol. 6B. Handbook of Econometrics. Elsevier. Chap. 73, pp. 5307–5368.
- (g) (Causal inference in fully nonparametric settings) Entire Pearl, J (2009). Causal Inference in Statistics: An Overview. *Statistics Surveys* **3**, 96–146.

### 3. Is identification all or nothing?

- (a) (Segue) Entire Mourifié, I and R Méango (2014). A note on the identification in two equations probit model with dummy endogenous regressor. *Economics Letters* **125**.(3), 360–363.
- (b) (Very early, but modern example) Leamer, EE (1981). Is it a demand curve, or is it a supply curve? Partial Identification Through Inequality Constraints. *Review of Economics and Statistics* **63**.(3), 319–327.
- (c) (Basic ideas) Tamer, E (2010). Partial Identification in Econometrics. *Annual Review of Economics* **2**, 167–195.
- (d) (Example) Sections 1, 2, 3, 3.1, 4, and 4.1 of Manski, CF and E Tamer (2002). Inference on Regressions with Interval Data on a Regressor or Outcome. *Econometrica* **70**.(2), 519–546.
- (e) (Example) Entire Manski, CF (1993). Identification of Endogenous Social Effects. *The Review of Economic Studies* **60**.(3), 531–542.
- (f) (Example) Sections 1 to 3 of Tamer, E (2003). Incomplete Simultaneous Discrete Response Model with Multiple Equilibria. *The Review of Economic Studies* **70**, 147–165.

### 4. The remaining shades of identification (if time permits)

- (a) (Basic ideas) Entire Chamberlain, G (1986). Asymptotic Efficiency in Semi-Parametric Models with Censoring. *Journal of Econometrics* **32**, 189–218.
- (b) (Example) Section 6 of Han, S and EJ Vytlačil (2015). Identification in a Generalization of Bivariate Probit Models with Dummy Endogenous Regressors.
- (c) (Identification on vanishing sets) Entire Khan S and E Tamer (2010). Irregular Identification, Support Conditions, and Inverse Weight Estimation. *Econometrica* **78**.(6), 2021–2042.