

14.383--Fall 2005 (1<sup>st</sup> half)  
E51-372; MW 1-2:30 pm  
T.A.: Matthew Harding

J. A. Hausman  
E52-271A

## ECONOMETRICS II

### Texts:

J. Hausman, "Specification and Estimation of Simultaneous Models" in  
Z. Griliches and M. Intriligator (eds.), *Handbook of Econometrics, Vol. 1*,  
1983, 391-448.

W. Greene, *Econometric Analysis*, 2003. (Requested held at Reserve desk,  
Dewey library, on sale at MIT Tech Coop) 5<sup>th</sup> edition

P. Ruud, *An Introduction to Classical Econometric Theory*, New York:  
Oxford University Press, 2000.

H. Thiel, *Principles of Econometrics*, 1971. (Requested held at Reserve desk,  
Dewey library.)

H. White, *Asymptotic Theory for Econometricians*, 1984.

J. Wooldridge, *Econometric Analysis of Cross Section and Panel Data*, 2002

### Supplementary Texts:

T. Amemiya, *Advanced Econometrics*, 1985. (Requested held at Reserve desk,  
Dewey library.)

D. Cox and D. Hinckley, *Theoretical Statistics*, 1974.

E. Malinvaud, *Statistical Methods of Econometrics* (2nd or 3rd ed.).  
(Requested held at Reserve desk, Dewey library.)

Students should not take this course for credit unless they have previously taken 14.382 or have the permission of the instructor. The course work will consist of two problem sets and a final examination. Satisfactory completion of the problem sets is required for the course.

P Denotes more difficult paper.

† See <http://www.jstor.org/journals>

## 1. Introduction to Simultaneous Equation Models

Hausman, Section I-II, pp. 392-402.

Greene, Sections 15.1-15.2.

Ruud, Chapter 26 (pp. 637-710)

Theil, Chapter 9.

P†Haavelmo, T., "The Statistical Implications of a System of Simultaneous Equations," *Econometrica* 11, 1 (January 1943): 1-12.

†Liu, "Underidentification, Structural Estimation, and Forecasting," in Hooper and Nerlove, eds., *Selected Readings from Econometrica* (28, 4 (October 1960)).

†Fisher, Frank, "On the Cost of Approximate Specification," in Hooper and Nerlove (29, 2 (April 1961)).

†Sims, C., "Macroeconomics and Reality," *Econometrica* 48, 1 (Jan 1980): 1-48.

Hahn, J. and Hausman, J., "Weak Instruments: Diagnosis and Cures in Empirical Econometrics," *American Economic Review*, 2003

## 2. Identification

Hausman, Section III, pp. 402-407.

Greene, Section 15.3.

Ruud, Chapter 26 (pp. 711-718)

Theil, pp. 443-450, 489-495.

†Koopmans, "Identification Problems in Economic Model Construction," in Hood and Koopmans, eds., *Studies in Econometric Method*, pp. 27-48 (also in Hooper and Nerlove, pp. 159-179 (17, 2 (April 1949))).

Fisher, Frank, *Identification Problem in Econometrics*, Krieger Publishing, 1976, Chapters 1 & 2.

P†Hausman and Taylor, "Identification in Simultaneous Equation Systems with Covariance Restrictions," *Econometrica* 51, 5 (September 1983): 1527-1549.

P†Hausman, Newey, and Taylor, "Efficient Estimation and Identification of Simultaneous Equation Models with Covariance Restrictions," *Econometrica* 55, 4 (July 1987): 849-854, 865-868.

## 3. Limited Information Estimation

Hausman, Section IV, Single Equation Estimation, pp. 408-413.

Greene, Sections 14.2.1 - 14.2.6.

Ruud, more Chapter 26 (pp. 718-721)

†White, H., "Instrumental Variable Regression with Independent Observations," *Econometrica* 50 (1982), pp. 483-499.

Theil. pp. 451-458, 497-500.

PWhite, Chapters 2-3; Chapter 4, pp. 61-69, 78-105; Chapter 5, pp. 107-115.

#### 4. Multivariate Least Squares, Efficient Estimation of the Reduced Form Parameters and Specification Tests

Hausman, Section IV, Reduced Form Estimation, pp. 417-418.

Greene, Sections 13.9 and 15.5.

Ruud, more of Chapter 26 (section 26.2)

Theil, pp. 294-311.

†Byron, "Testing Structural Specification Using the Unrestricted Reduced Form," *Econometrica* 42, 5 (September 1974): 869-883.

Hausman, Section V, pp. 430-436.

Breusch and Pagan, "The Lagrange Multiplier Test and Its Applications to Model Specification in Econometrics," *Review of Economic Studies*, 1980, pp. 239-253.

#### 5. Full Information Estimation--Three Stage Least Squares, Instrumental Variables, and FIML (LIML)

Hausman, Section IV, System Estimation, pp. 413-417.

Amemiya, Chapter 7, pp. 228-242.

Greene, Section 15.6.

Ruud, more of Chapter 26 (pp. 721-727)

Theil, pp. 508-527.

Hausman, Section IV, Maximum Likelihood Estimation (FIML and LIML), pp. 418-430.

‡Hausman, Newey, and Taylor, 1987, *Ibid.*, pp. 854-865.

#### 6. Weak Instruments

Hahn, J. and Hausman, J., "Weak Instruments: Diagnosis and Cures in Empirical Econometrics," *American Economic Review*, 2003.

J. Hausman Lecture notes, Uppsala 2004

Hahn, J. and Hausman, J.A., "A New Specification Test for the Validity of Instrumental Variables," *Econometrica*, 2002.

Hahn, J., and Hausman, J., "IV Estimation with Valid and Invalid Instruments", mimeo, July 2003.

Donald, S.G. and Newey, W.K., "Choosing the Number of Instrumental Variables," *Econometrica*, 2001

C. Hansen, J. Hausman, and W. Newey, "Many Weak Instruments and Microeconomic Practice," with C. Hansen and W. Newey, mimeo July 2005.

Hahn, J., Hausman, J., and Kuersteiner, G., "Estimation with Weak Instruments: Accuracy of Higher Order Bias and MSE Approximations", *Econometrics Journal*, 2004.

Kleibergen, F., "Pivotal Statistics for Testing Structural Parameters in IV Regression," *Econometrica* 70, 5 (2002), 1781-1803.

Hahn, J. and Hausman, J., "Notes on Bias in Estimators for Simultaneous Equation Models," *Economics Letters*, 2002.

- Bound, J., D.A. Jaeger, and R. Baker, "Problems with Instrumental Variable Estimation When the Correlation Between the Instruments and the Endogenous Explanatory Variable is Weak," *Journal of the American Statistical Association* 55 (1995), 650-659.
- P†Bekker, P.A., "Alternative Approximations to the Distributions of Instrumental Variable Estimators," *Econometrica* 62 (1994), 657-681.
- P†Staiger, D. and J.H. Stock, "Instrumental Variable Regression with Weak Instruments," *Econometrica* 65, 557-586.
- P Rothenberg, T.J., "Asymptotic Properties of Some Estimators in Structural Models," *Studies in Econometrics, Time Series, and Multivariate Statistics*, Academic Press, 1983.
- P†Morimune, K., "Approximate Distribution of k-Class Estimators When the Degree of Overidentifiability is Large Compared with the Sample Size," *Econometrica* 51, (1983), 821-841.

## 7. Nonlinear Simultaneous Equation Models/Generalized Method of Moments (GMM)

- \*Hausman, Sect. VI, Griliches and Intriligator, pp. 436-444.
- Greene, Sections 10.4, 14.4, 15.5.2c, 15.6.3
- Ruud, Chapter 21
- Amemiya, Chapter 4
- †Hansen, L.P., "Large Sample Properties of Generalized Method of Moments Estimators," *Econometrica* 50, 4 (July 1982), pp. 1029-1054
- †Hansen and Singleton, "Generalized IV Estimation of Nonlinear Rational Expectations Models," *Econometrica* 50, 5 (September 1982): 1269-1286.
- P†T. Rothenberg, "Identification in Parametric Models," *Econometrica* 39, 3 (May 1971): 577-591.
- †C. Roehrig, "Conditions for Identification in Nonparametric and Parametric Models," *Econometrica* 56, 2 (March 1988): 433-447.
- †W. Newey, "Efficient Instrumental Variables Estimation of Nonlinear Models," *Econometrica* 58, 4 (July 1990): 809-837.
- †P.M. Robinson, "Best Nonlinear 3SLS Estimation of Certain Econometric Models," *Econometrica* 59, 3 (May 1991): 755-786.
- Stock, J.H., J. Wright and M. Yogo (2002): "A Survey of Weak Instruments and Weak Identification in GMM," *Journal of Business and Economic Statistics*, 20, 518-529.