Econometrics II   **SYLLABUS**   **Dr. Seung Chan Ahn**
Sogang University   **Spring 2003**

1. GENERAL DESCRIPTION

This course presumes that students have completed Econometrics I or equivalent. This course is designed to acquaint graduate students with a variety of extensions of conventional linear models, such as panel data models, simultaneous equations models, and qualitative response models. The goal of this course is to acquaint students with basic econometric theories and techniques for the analysis of panel data models. My philosophy is that students require a solid background in theory in order to conduct quality applications. Students may expect that roughly 60% of class materials are about theories, and 40% are about applications.

2. TEXTBOOKS

(1)   Required

       Greene, Econometric Analysis, 5th edition (Prentice)

(2)   Optional

       Hamilton, Time Series Analysis (Princeton)
       Wooldridge, Introductory Econometrics (South-Western).
       Stock and Watson, Introduction to Econometrics (Addison Wesley)
       Baltagi, ECONOMETRIC ANALYSIS OF PANEL DATA (Wiley), 2nd ed., 2001
       Schmidt, Econometrics (Marcel Dekker)
       Maddala, Limited-Dependent and Qualitative Variables in Econometrics (Cambridge Press)
       Judge, et al, The Theory and Practice of Econometrics, 2nd edition (Wiley)
       Davidson and MacKinnon, Estimation and Inference in Econometrics (Oxford)

(3)   Occasional

       Amemiya, Advanced Econometrics (Harvard Press)
       Theil, Principles of Econometrics (Wiley)

3. COURSE OUTLINE

The schedule listed below is just an estimate. Adjustments, if necessary, may happen during the term.

1. Basic Panel Data Models (2 sessions).
2. Instrumental Variables Estimation and Two Stage Least Squares (1 session).
3. Seemingly Unrelated Regressions (SUR) (1 session).
4. Simultaneous Equations Models (3 sessions).
5. Generalized Methods of Moments (GMM) (2 sessions).
6. Maximum Likelihood Estimation (MLE) (1 sessions).
7. Qualitative and Limited Dependent Variables Models (4 sessions).
8. Final exam (1 session).

4. REFERENCES

1. Basic Panel Data Models:

   Greene, Ch. 13.1 – Ch. 13.4.
   Stock and Watson, Ch. 8.
   Wooldridge, Ch. 14
   Baltagi, Ch.1 – Ch. 4.
   Balestra, P. and M. Nerlove (1966), Pooling Cross Section and Time Series Data in the Estimation of a Dynamic Model: The Demand for Natural Gas, Econometrica, 585-612.
   Mundlak, Y., 1978, On the Pooling of Time-Series and Cross Section Data, Econometrica, 69-85.
   Hausman, J., 1978, Specification Tests in Econometrics, Econometrica, 1251-1271.
   Kiefer, N., 1980, Estimation of Fixed Effects Models for Time Series of Cross-Sections with Arbitrary Intertemporal Covariance, Journal of Econometrics, 195-202

2. Instrumental Variables Estimation and Two Stage Least Squares:

(2.1) Single Equation Models:

   Greene, Ch. 5.
   Stock and Watson, Ch. 10.
   Wooldridge, Ch. 15.
   Staiger, D. and J. Stock, 1997, Instrumental variables regression with weak instruments, Econometrica, 65, 557-586.
   Donald, S. and W.K. Newey, 2001, Choosing the number of instruments, Econometrica, 69, 1161-1191.
   Hahn, J. and J. Hausman, 2002, A new specification test for the validity of instrumental variables, Econometrica, 70, 163-189.

(2.2)   Panel Data Models:

Greene, Ch. 13.5.
Baltagi, Ch. 7.
Hausman, J. and W. Taylor, 1981, Panel Data and Unobservable Individual Effects, Econometrica, 1377-1399.
Amemiya, T. and T. MaCurdy, 1986, Instrumental-variable Estimation of An Error-components Model, Econometrica, 869-880.
Breusch, T, G. Mizon and P. Schmidt, 1989, Efficient Estimation Using Panel Data, Econometrica, 695-701.
Cornwell, C. and P. Rupert, 1988, Efficient Estimation with Panel Data: An Empirical Comparison of Instrumental Variables Estimators, Journal of Applied Econometrics, 3, 149-155.
Baltagi, B. and S. Khanti-Akom, 1990, On Efficient Estimation with Panel Data: An Empirical Comparison of Instrumental Variables Estimators, Journal of Applied Econometrics, 5, 401-406.
Ahn, S. and P. Schmidt, 2000, Estimation of Linear Panel Data Models Using GMM, Chapter 8 in Generalised Method of Moments Estimation, edited by Laszlo Matyas: Cambridge University Press, Cambridge, U.K..
Im, K.S., S. Ahn, P. Schmidt and J. Wooldridge, 1999, Efficient Estimation of Panel Data Models with Strictly Exogenous Explanatory Variables, Journal of Econometrics, 93, 177-201.
Ahn, S. and P. Schmidt, 1999, Modified Generalized Instrumental Variables Estimation of Panel Data Models with Strictly Exogenous Instrumental Variables, in Analysis of Panels and Limited Dependent Variables: A Volume in Honour of G S Maddala, edited by Cheng Hsiao, Kajal Lahiri, Lung-fei Lee and M. Hashem Pesaran: Cambridge University Press, Cambridge, U.K.

3.   Seemingly Unrelated Regressions (SUR):

Greene, 14.
Schmidt, 2.6.
Zellner, Journal of American Statistics Association, 1962.
Phillips, Econometrica, July, 1985.

4.   Simultaneous Equations Models:

(4.1)   Introduction:
Greene, Ch. 15.1 – Ch. 15.2.
Wooldridge, Ch. 16.
Schmidt, Ch. 4.1 – Ch. 4.3.
Davidson and MacKinnon, Ch. 7.1- Ch. 7.3.
Hausman, 1984, Handbook of Econometrics, Vol. I, Ch. 7.

(4.2).   Identification:
         Greene, Ch. 15.3.
         Schmidt, Ch. 4.4.
         Davidson and MacKinnon, Ch. 7.8.
         Hsiao, 1984, Handbook of Econometrics, Vol. I, Ch. 4.
         Hausman and Taylor, Econometrica, September. 1983.
         Sargan, Econometrica, November. 1983.

(4.3)   Single Equation Estimators:
         Greene, Ch. 15.5.
         Schmidt, Ch. 4.5 – Ch. 4.8.
         Davidson and MacKinnon, Ch. 7.4 – Ch. 7.7.

(4.4)   Systems Estimators (3SLS, FIML, etc.):
         Greene, Ch. 15.6.
         Schmidt, Ch. 5.1 – Ch. 5.3.
         Hausman, Econometrica, July 1985.
         Hausman, Newey and Taylor, Econometrica, July 1987.

(4.5)   Comparisons of Estimators:
         Greene, Ch. 15.7.
         Phillips, 1984, Handbook of Econometrics, Vol. I, Ch. 8.

(4.6)   Recursive Models:
         Theil, 9.6.
         Lahiri and Schmidt, Econometrica, September, 1978.

(4.7).   Specification Tests:
         Greene, Ch. 15.8.
         Davidson and MacKinnon, Ch. 7.9.
         Hausman, 1984, Handbook of Econometrics, Vol. I, Ch. 7.
         Newey, 1985Journal of Econometrics, Vol. 29, 1985.
         Pesaran and Smith, 1990, Journal of Econometrics.

(4.8)   Dynamic Models:

         Greene, Ch. 16.9.

5.   Generalized Methods of Moments (GMM):

(5.1)   General Principle:
         Greene, Ch. 18.

Hamilton, Ch. 10, Ch. 14.

Hansen, L., 1982, Large Sample Properties of Generalized Method of Moments Estimators, Econometrica, 50, 1029-1054.

Chamberlain, G., 1987, Asymptotic Efficiency in Estimation with Conditional Moment Restrictions, Journal of Econometrics, 34, 305-334.

Newey, W.K. and D. McFadden, 1994, Econometric Theory, Chapter 36 in Handbook of Econometrics, Vol. 4, R.F. Engle and D.L. McFadden, eds., North-Holland.

Hansen, L.P., J. Heaton and A. Yaron, 1996, Finite-sample properties of some alternative GMM estimators, Journal of Business & Economic Statistics, 14, 262-280.

Newey, W. K. and K. West, 1987, A Simple, Positive Semi-definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix, Econometrica, 55, 703-708.

Andrews, D.W.K., 1991, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix Estimation, Econometrica, 59, 817-58.

Andrews, D. W. K. and J. C. Monahan, 1992, An Improved Heteroskedasticity and Autocorrelation Consistent Covariance Matrix Estimator, Econometrica, 60, 953-966.

Newey, W.K. and K. West (1994), Automatic Lag Selection in Covariance Matrix Estimation, Review of Economic Studies, 61, 631-654.

Den Haan, W. and A. Levin, 2001, Robust covariance matrix estimation with data-dependent VAR prewhitening order, mimeo, the University of California at San Diego.

Newey, W. and K. West, 1987, Hypothesis Testing with Efficient Method of Moments Estimation, International Economic Review, 28, 777-787.

Newey, W., 1985, Generalized Method of Moments Specification Testing. Journal of Econometrics, 29, 229-256.

Eichenbaum, M. S., L. Hansen and K. Singleton, 1988, A Time Series Analysis of Representative Agent Models of Consumption and Leisure Choice under Uncertainty, The Quarterly Journal of Economics, 103, 51-78.

Ahn, S.C. and P. Schmidt, 1995, A Separability Result for GMM Estimation, with Applications to GLS Prediction and Conditional Moment Tests, Econometric Reviews, 14, 19-34.

Ahn, S.C., 1995, Robust GMM Tests for Model Specification, with Applications to Conditional Moments Testing and Structural Instability Testing, unpublished manuscript at Arizona State University.

Hall, P. and J. Horowitz, 1996, Bootstrap Critical Values for Tests Based on Generalized Method of Moments Estimators, Econometrica, 64, 891-916.

Brown, B.W. and W.K. Newey, 2001, GMM, efficient bootstrapping, and improved inference, Rice University, mimeo.

Chernick, M.C., 1999, Bootstrap Methods: A Practitioner's Guide, John Wiley & Sons.

Imbens, G., 1997, One-step estimators for over-identified generalized method of moments models, Review of Economic Studies, 64, 359-383.

Imbens, G., R. Spady and P. Johnson, 1998, Information theoretical approaches to inference in moment condition models, Econometrica, 66, 333-357.

Kitamura, Y. and M. Stutzer, 1997, An information-theoretic alternative to generalized method of moments estimation, Econometrica, 65, 861-874.

Stock, J.H. and J. Wright, 2000, GMM with Weak Identification, Econometrica, 68, 1055-1096.

(5.2)   Applications to Panel Data Models:

Ahn, S.C. and S. Low (1996), AA Reformulation of the Hausman Test for Regression Models with Pooled Cross-Section-Time-Series Data,@ Journal of Econometrics, 71, 291-307.

Arellano, M. and O. Bover (1995), AAnother Look at the Instrumental Variable Estimation of Error-component Models,@ Journal of Econometrics, 68, 29-51.

Ahn, S. and P. Schmidt, 2000, Estimation of Linear Panel Data Models Using GMM, Chapter 8 in Generalised Method of Moments Estimation, edited by Laszlo Matyas: Cambridge University Press, Cambridge, U.K.

Im, K.S., S. Ahn, P. Schmidt and J. Wooldridge, 1999, Efficient Estimation of Panel Data Models with Strictly Exogenous Explanatory Variables, Journal of Econometrics, 93, 177-201.

Ahn, S. and P. Schmidt, 1999, Modified Generalized Instrumental Variables Estimation of Panel Data Models with Strictly Exogenous Instrumental Variables, in Analysis of Panels and Limited Dependent Variables: A Volume in Honour of G S Maddala, edited by Cheng Hsiao, Kajal Lahiri, Lung-fei Lee and M. Hashem Pesaran: Cambridge University Press, Cambridge, U.K.

Arellano, M., and S. Bond, 1991, Some Tests of Specification for Panel Data: Monte Carlo Evidence and Application to Employment Equation, Review of Economic Studies, 277-297.

Ahn, S. and P. Schmidt, 1995, Efficient Estimation of Models for Dynamic Panel Data, Journal of Econometrics, 68, 5- 27.

Ahn, S. and P. Schmidt, 1997, Efficient Estimation of Dynamic Panel Data Models: Alternative Assumptions and Simplified Estimation, Journal of Econometrics, 76, 309-321.

Blundell, R. and Bond, S., 1998, Initial Conditions and Moment Restrictions in Dynamic Panel Data Models, Journal of Econometrics, 115-143.

Hahn, J., 1999, How informative is the initial condition in the dynamic model with fixed effects, Journal of Econometrics, 93, 309-326.

6.   Maximum Likelihood Estimation (MLE):

Greene, Ch. 17.
Hamilton, Ch. 5.
Amemiya, Ch. 3.
Engle, R, 1984, Wald, Likelihood Ratio, and Lagrangean Multiplier Tests in Econometrics, Handbook of Econometrics, Vol. II, edited by Z. Griliches and Intriligator, Ch. 13.

7. Qualitative and Limited Dependent Variables Models:

(7.1) Cross-Sectional Analysis:

Greene, Ch. 21 – Ch. 22.
Davidson and MacKinnon, Ch. 15.
Maddala, 1983, Limited Dependent and Qualitative Variables in Econometrics, Cambridge Press, 1983.

(7.2) Panel Data Analysis:

Greene, Ch. 21 – Ch. 22.
Baltagi, Ch. 10.4 - 10.5.
Arellano, M. and B. Honore, 2001, Panel data models; Some recent development, Chapter 53 in Handbook of Econometrics, Vol. 5, J. Heckman and E. Leamer, eds., North-Holland.
Chamberlain, G., 1980, Analysis of Covariance with Qualitative Data, Review of Economic Studies, 225-238.
Gourieroux, C. and A. Monfort, 1993, Simulation-Based Inference, Journal of Econometrics, 59, 5-33.
Honore, B., 1992, Trimmed Lad and Least Squares Estimation of Truncated and Censored Regression Models with Fixed Effects, Econometrica, 533-565.
Honore, B., 1993, Orthogonality Conditions for Tobit Models with Fixed Effects and Lagged Dependent Variables, Journal of Econometrics, 59, 35-62.
Kyriazidou, E., 1997, Estimation of a panel data sample selection model, Econometrica, 65, 1335-1364.
Honore, B. and Kyriazidou, E., 2002, Panel data discrete choice models with lagged dependent variables, Econometrica.
Wooldridge, J., 1995, Selection corrections for panel data models under conditional mean independence assumptions,@ Journal of Econometrics, 68, 115-132.
Wooldridge, J., 1999, Distribution-free estimation of some nonlinear panel data models, Journal of Econometrics, 90, 77-97.
Blundell, R., R. Griffith and F. Windmeijer, 2002, Individual effects and dynamics in count data models, Journal of Econometrics, 108, 113-131

5. GRADE

(1) Weekly Assignments: 10%.
(2) Weekly Quizzes: 40%
(3) Final Exam: 50%.