

Office: BAC 679
Phone: 480-965-6574
Office Hours: 3:30-5:00pm TTH, and by appointment
Class Hours: 1:40-2:55pm T at BA 358, from March 22 to May 3.

1. GENERAL DESCRIPTION

This course presumes that students have completed ECN 725 and ECN 726 or equivalent. The goal of this course is to acquaint students with techniques they may wish to apply in thesis research.

2. TEXTBOOKS

Hamilton, TIME SERIES ANALYSIS (Princeton)
Greene, ECONOMETRIC ANALYSIS, 5th ed (Prentice)
Amemiya, T (1985), ADVANCED ECONOMETRICS (Harvard Press)
Wooldridge, J. (2002), ECONOMETRIC ANALYSIS OF CROSS SECTION AND PANEL DATA (MIT)
Baltagi, ECONOMETRIC ANALYSIS OF PANEL DATA (Wiley)
Lee, M.J. (2002), PANEL DATA ECONOMETRICS (Academic Press)
Campbell, Lo and MacKinlay, THE ECONOMETRICS OF FINANCIAL MARKETS (Princeton)
Gourieroux, C. and A. Monfort (1996), SIMULATION-BASED ECONOMETRIC METHOD (Oxford)
Maddala, LIMITED DEPENDENT AND QUALITATIVE VARIABLES IN ECONOMETRICS (cambridge)

3. COURSE OUTLINE

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

- (1) Limited Dependent Variables Models
 1. Binary choice models (Review)
 2. Probit/Logit Panel Models.
 3. Tobit Panel Models.
 4. Panel Selection Models.
 5. Ordered probit model
 6. Unordered choice models

7. Bivariate probit models
 8. Double selection models
 9. Count Data Models
 10. Duration Data Models
- (2) Asset Pricing Models
1. CAPM
 2. Multifactor Pricing Models.
 3. Stochastic Discount Factor Models.
- (3) Spatial Correlation
- (4) Univariate Time Series Analysis
1. Stationarity
 2. AR and MA
 3. MLE
- (5) Vector Autoregression (VAR)
1. Estimation and testing hypothesis
 2. Impulse-response function
 3. Structural VAR
- (6) Autoregressive Conditional Heteroskedasticity (ARCH) in Time Series Models
1. Basic model
 2. ARCH
 3. GARCH
 4. ARCH-M
 5. EGARCH
 6. TGARCH
 7. Multivariate GARCH
 8. Quasi-MLE
- (7) Nonstationary Time Series Data
1. Trend stationary and unit root
 2. Testing unit root
- (8) Cointegration
1. Definitions
 2. Testing cointegration
 3. Estimation in cointegration systems

4. REFERENCES

- (1) Limited Dependent Variables Models
1. Greene, Ch. 21.1 - 21.5.
Wooldridge, Ch. 15.1-15.7
Maddala, Ch. 2.
Amemiya, Ch. 9.6.
Judge, G., et al., 1985, *The Theory and Practice of Econometrics*, John Wiley & Son Inc., Ch. 18.2.
Manski, C., 1975, The Maximum Score Estimation of the Stochastic Utility Model of Choice, *Journal of Econometrics*, 205-228.
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 2. Greene, Ch. 21.5.
Wooldridge, Ch. 15.8.
Gourieroux and Monfort, Ch. 3.
Lee, Ch. 4.
Butler, J., and R. Moffitt, 1982, A computationally efficient quadrature procedure for the one factor multinomial probit model, *Econometrica*, 50, 761-764.
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.
 3. Wooldridge, Ch. 16.8
Gourieroux and Monfort, Ch. 3.
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.
 4. Wooldridge, Ch. 17.7.
Verbeek, M., and T. Nijman, 1992, Testing for selectivity bias in panel data models, *International Economic Reviews*, 33, 681-703.
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5. Greene, Ch. 21.8.
Wooldridge, Ch. 15.10.
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6. Greene, Ch. 21.7.
Wooldridge, Ch. 15.9
Maddala, Ch. 2.12, 3.1 - 3.3.
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7. Greene, Ch. 21.6.
Maddala, Ch. 11.6.
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8. Maddala, Ch. 1, 6.
Greene, Ch. 22.1 - 20.3.
Amemiya, Ch. 4, 9, 10.
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Heckman, J., 1979, Sample Selection Bias as a Specification Error, *Econometrica*, 153-161.
Heckman, J., 1974, Shadow Prices, Market wages, and Labor Supply, *Econometrica*, 670-694.

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- Melino, A., 1982, Testing for Sample Selection Bias, *Review of Economic Studies*, 151-153.
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- Maddala, Appendix.
- Ahn, S.C., 1992, The Lagrangean Multiplier Test for a Model with Two Selectivity Criteria, *Economics Letters*, 9-15.
9. Greene, Ch. 21.9.
Wooldridge, Ch. 19.
10. Greene, Ch. 22.5.
Wooldridge, Ch. 20.
- (2) Asset Pricing Models
1. Campbell, Ch. 5.
2. Campbell, Ch. 6.
Ahn and Gadarowski, 2003, Two-Pass cross-sectional regression of factor pricing models, ASU, mimeo.
Amsler, Christine E., and Peter Schmidt, 1985, A Monte Carlo investigation of the accuracy of multivariate CAPM tests, *Journal of Financial Economics* 14, 359-375.
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3. Campbell, Ch. 8.
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- (3) Spatial Correlation
- Moulton, B.R., 1990, An illustration of a pitfall in estimating the effects of aggregate variables on micro units, *Review of Economics and Statistics*, 72, 334-338.
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- (4) Univariate Time Series Analysis
- Hamilton, Ch. 1 - 6.
- (5) Vector Autoregression (VAR)
- Hamilton, Ch. 10 - 11.
- Sims, C., 1980, Macroeconomics and reality, *Econometrica*, 1-48.

(6) ARCH/GARCH

Basic references:

Greene, Ch. 11.8.

Hamilton, Ch. 21.

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(7) Nonstationary Time Series Data

Hamilton, Ch. 15 - 18.

Banerjee, *et al*, Ch. 3 - 4.

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(8) Cointegration

- Hamilton, Ch. 19 - 20.
- Banerjee, *et al*, Ch. 5 - 8.
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5. GRADE

Your final grade will be determined by 50% of your grade from Dr. Santos and 50% from Dr. Ahn. Your grade from Dr. Ahn is determined by pop-up quizzes and a term paper.

- (1) 5-6 Pop-up quizzes (20%)
- (2) A Term Paper (30%)

Everyone (not in group) should write a term paper, which counts 30% of your grade. The font sizes are limited to minimum 12 pt. Margins must be all one inch for top, bottom, left and right. The paper should not be more than 20 pages (including tables and bibliographical lists.) Note that the number of pages is not necessarily correlated with grade. Concise and compact papers are strongly encouraged. The due day is May 3, Tuesday, 1:40pm.

The paper should be empirical. (If you would like a theory or a survey paper, you should contact Dr. Ahn to determine whether your project is acceptable.) You have to collect your own data set and apply advanced econometric techniques (the techniques introduced in the class or higher). The paper should describe (i) motivation; (ii) relevance of econometric techniques applied; (iii) and correct interpretation of empirical results. The paper with higher-level econometric techniques is more appreciated. Gauss or Matlab should be used. The empirical results obtained from user-friendly software such as Eviews and LIMDEP will not be appreciated.