UADPhilEcon

University of Athens

Doctor of Philosophy in Economics

Syllabus for:

Advanced Econometrics

Semester:	Fall 2004
Day and Time:	Thursday, 3:00-6:00 pm
Instructor:	Savas Papadopoulos, Ph.D.
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OBJECTIVES: The goals of this course are to help students apply advanced econometric models and multivariate statistical methods to real data using comprehensive Computer Packages such as SAS.

TEXTBOOKS: (See Reference for more details)

i) Greene, W.H. (2003). *Econometric Analysis*
For Module 1: Chapters 1-15, 19-20 (selected topics).

ii) Johnson, R.A. and Wichern, D.W. (1998). *Applied Multivariate Statistical Analysis.* 5th ed, Prentice Hall, New Jersey.
For Module 3: Chapters 8-9, 11-12 (selected topics).

COMPUTER LANGUAGES & PACKAGES:

i) Matrix Languages: SAS/PROC IML,.

ii) Computer packages: SAS.

ASSESSMENT:

30% Projects – One project in Module 1 and the other in Module 2, (15% each)

70% Final Exam – To answer four out of six problems.

Course Outline

Week	TOPICS
MODULE 1 ***Nonlinear & Generalized Multivariate Regression Models***	
1	Review of Linear Regression, Nonlinear, Logistic.
2	Generalized Linear Models, Robust, Categorical, etc
3	Linear & Nonlinear Simultaneous Equations,
4	Structural Equation Modelling, Measurement Errors, Latent Variables.
MODULE 2 ***Panel Data Analysis, Time Series & Simulation***	
5	Time Series, Autoregressive, ARIMA, ARCH, GARCH, etc.
6	Panel Data, Fixed & Random Effects, etc.
7	Dynamic Panel Data, Random Coefficients, etc.
8	Simulation, Monte Carlo Studies, and Bootstrapping, etc.
MODULE 3 ***Applied Multivariate Statistical Methods***	
9	Principal Components
10	Factor Analysis
11	Discriminant Analysis
12	Cluster Analysis

REFERENCE

Textbooks and Additional Reference Books

Baltagi, B.H. (2001). *Econometric Analysis of Panel Data.* 2nd ed, John Wiley and Sons, New York.

Bollen, P.A. (1989). *Structural Equations with Latent Variables*. John Wiley and Sons, New York.

Bowerman, B.L. and O'Connell, R.T. (1993) *Forecasting and Time Series: An Applied Approach.* 3rd ed, Duxbury.

Everitt, B.S. and Dunn, G. (1991) *Applied Multivariate Data Analysis.* Edward Arnold.

Greene, W.H. (2003). *Econometric Analysis.* 5th ed, Prentice Hall, New Jersey.

Gujarati, D. (2003). *Basic Econometrics.* 4th ed, New York: McGraw-Hill.

Hayashi, F. (2000) *Econometrics.* Princeton: Princeton University Press.

Hill, R.C., Griffiths, W.E. and Judge, G.G.. (2000). *Undergraduate Econometrics*. 2nd ed, John Wiley and Sons, New York.

Hsiao, C. (2003). *Analysis of Panel Data.* 2nd ed, Cambridge University Press.

Judge, G.G., Hill, R.C., Griffiths, W.E., Lutkepohl, H., and Lee, T.C. (1982). *Introduction to the Practice of Econometrics*. 2nd ed, John Wiley and Sons, New York.

Johnson, R.A. and Wichern, D.W. (1998). *Applied Multivariate Statistical Analysis.* 5th ed, Prentice Hall, New Jersey.

Johnston, J. and DiNardo (1997). *Econometric Methods.* 4th ed, New York: McGraw-Hill.

Maddala, G. (1992). *Introduction to Econometrics.* 2nd ed, Macmillan, New York.

Magnus, J. and Neudecker, H. (1999). *Matrix Differential Calculus with Applications in Statistics and Econometrics***.** 2nd ed, John Wiley and Sons, New York.

Rencher, A. C. (1995). *Methods of Multivariate Analysis.* John Wiley and Sons, New York.

SAS (1996). *SAS systems for mixed models,* BBU Press.

SAS/STAT, (1999) Volumes 1-6, *User's Guide*. Version 7-1.

SAS/ETS, (1999) Volumes 1-3, *User's Guide*. Version 7-1.

SAS. (2000). *Categorical data analysis using the SAS system.* 2nd ed, BBU Press and J.Wiley.

SAS (2002). Using SAS in financial research*,* BBU Press.

SAS (2003). *SAS for forecasting time series.* 2nd ed, BBU Press and J.Wiley.

SAS (2003). SAS/IML Software.

SAS (2003). SAS Guide to Macro Proicessing.

SAS (2003). SAS Langauege Guide.

Wooldridge, J.M. (2002). *Econometric Analysis of Cross Section and Panel Data.* The MIT Press.

Papers

Applications of Panel Data in Banking:

AndersoAhmed, A. Takeda, C. and Thomas S. (1999) "Bank loan loss provisions: a re-examination of capital management, earnings management and signaling effects", *Journal of Accounting and Economics*, vol.28.

Hoggarth, G. Pain, D. (2002), "Bank provisioning: the UK experience", *Financial Stability Review,* June.

Kim, M., Kross, W. (1998) "The impact of the 1989 change in bank capital standards on loan loss provisions and loan write-offs." *Journal of Accounting and Economics* 25 (1), 69-100.

Papadopoulos, S. T. (2003) "Asymptotic Robustness of Multivariate Models with Latent Variables for Unbalanced Panel Data" . 2003 Proceedings of the Greek Statistical Institute.

Applications of Panel Data in Finance and Insurance:

Baranoff, E. G. and Sager, T. W., 2002, "The Relations among Asset Risk, Product Risk, and Capital in the Life Insurance Industry." *Journal of Banking and Finance,* 26, 1181-97.

Baranoff, E. G. Papadopoulos, S. and Sager, T. W., (2004) , "The Effect of Regulatory versus Market Asset Risk on the Capital Structure of Life Insurers: A Structural Equation Modeling Approach " *Under Revision for publication.*

Papadopoulos, S., Baranoff, E., and Sager, T. (2002) "*Financial Models with Structural Equation Modeling for the Capital Structure of Life Insurers".* 2002 Proceedings of the Greek Statistical Institute.

Theory for Advanced Econometrics, Panel Data, and Structural Equation Modeling:

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

Anderson, T.W. (1989). "Linear Latent Variable Models and Covariance Structures" *Journal of Econometrics,* **41**, 91-119.

Hsiao, C., Pesaram, H.M., and Tahmiscioglu, K.A. (2002) "Maximum Likelihood Estimation of Fixed Effects Dynamic Panel Data Models Covering Short Time Periods" *Journal of Econometrics*, **109**, 107-150.

Kiviet, J.F. (1995) "On Bias, Inconsistency, and Efficiency of Various Estimators in Dynamic Panel Data Models" *Journal of Econometrics*, **68**, 53-78.

Papadopoulos, S. and Amemiya, Y. (Accepted tentatively). "Correlated populations with fixed and non-normal latent variables" *Annals of Statistics*.

Papadopoulos, S. and Amemiya, Y.. (1995) *"On Factor Analysis of Longitudinal Data".* Published in the 1995 ASA Proceedings, Biometrics Section. 130-135.

Papadopoulos, S. and Amemiya, Y.. (2004) "Factor Analysis of Panel Data". *Under revision for publication*

SAS PROCEDURES

FOR ECONOMETRICS

REGRESSION
- REG
- GLM - GLMMOD (GENERALIZED LINEAR MODELS)
- NLIN (NON-LINEAR REGRESSION)
- RSREG (RESPONSE SURFACE)
- GENMOD (GENERALIZED MODELS)

MULTIVARIATE REGRESSION
- SYSLIN (SIMULTANEOUS EQUATIONS)
- SIMLIN (PREDICTION FOR SIMULTANEOUS EQUATIONS)
- MODEL (NON-LINEAR SIMULTANEOUS EQUATIONS)
- CALIS (COVARIANCE STRUCTURE – MEASUREMENT ERRORS-LATENT VARIABLES)

TIME SERIES
- AUTOREG
- ARIMA
- FORECAST

PANEL DATA
- MIXED
- TSCSREG (TIME SERIES CROSS SECTIONAL DATA)
- NLMIXED (NON-LINEAR)

CATEGORICAL DATA ANALYSIS
- FREQ (FREQUENCIES)
- CATMOD (CATEGORICAL)
- GENMOD (GENERALIZED)
- LOGISTIC
- PROBIT
- NLMIXED (PANEL DATA)

LIMITED DEPENDENT VARIABLE AND DURATION MODELS
- LIFEREG
- LIFETEST

FOR MULTIVARIATE STATISTICS

DIMENSION REDUCTION

- PRINCOMP (PRINCIPAL COMPONENTS)
- PRINQUAL (PRINCIPAL COMPONENTS OF QUALITATIVE DATA)
- FACTOR
- SCORE

CLASSIFICATION

- DISCRIM (DISCRIMINANT ANALYSIS)
- STEPDISC (STEPWISE DISCRIMINANT)
- CLUSTER
- CANDISC (CANONICAL DISCRIMINANT ANALYSIS)

OTHER PROCEDURES FOR MULTIVARIATE STATISTICS

- MANOVA (MULTIVARIATE ANALYSIS OF VARIANCE)
- CANCORR (CANONICAL CORRELATION)

PROGRAMMING

DATA MANIPULATION

MATRIX LANGUAGE

- **IML –** (INTERACTIVE MATRIX LANGUAGE, for simulations, etc)

MACRO PROCESSING

SIMULATION

- **SIM2D**