

Panel Data Econometrics

Course Number	M.WIWI-VWL.0063
Course Type and Credits	Lecture and tutorial, 6 ECTS
Lecturer	Prof. Inmaculada Martínez-Zarzoso
Cycle	every summer term
Examination format	Stata Assignment 30% and final exam 70%
Course Description	<p>This course aims to study panel data econometric techniques in an intuitive and practical way and to provide the skills and understanding to read and evaluate empirical literature and to carry out empirical research. Empirical evaluation of economic models is an important feature of the study and application of economics. The course is concerned with the application of econometric methods, with little emphasis on the mathematical aspects of the subject (which may be studied in other modules). The computer software package STATA will be used for practical work. Previous knowledge of intermediate econometrics is required.</p>
Course Content	<p>Linear Panel Data Models</p> <ol style="list-style-type: none"> 1. Static Linear Panel Data Models <ol style="list-style-type: none"> 1.1 Introduction to Panel Data 1.2 Fixed Effects: Unobserved heterogeneity and Within Group Estimation, Between Group Estimation, Two Ways Fixed Effects and Un-balanced Panels. 1.3 Random Effects 1.4: Hausman's Specification Test for Random Effects 1.5 Heteroskedasticity and Autocorrelation 1.6 Mundlak's Approach 2. Endogeneity and Dynamic Linear Panel Data Models <ol style="list-style-type: none"> 2.1 Strict Exogeneity and Predetermined Variables. 2.2 Endogeneity and the Hausman-Taylor's Instrumental Variables Estimator 2.3 Generalised Method of Moments for Dynamic Panels 2.4 Heterogeneous Panels: Pooled and Augmented Mean Group Estimation 2.5 Grouped Fixed Effect Estimator 3. Special Topics: Quasi-experiments <ol style="list-style-type: none"> 3.1 Differences-in-Differences Analysis 3.2 Matching Estimators 3.3 Regression Discontinuity Estimators 3.4 Potential Problems with quasi-experiments Non-linear Panel Data Models 4. Panel Data Models for Discrete Variables <ol style="list-style-type: none"> 4.1 Binary Response Panel Data Models with Strictly Exogenous Variables: Pooled Estimator versus Fixed effects Logit 4.2 Random Effects Probit 4.3 Fixed versus Random Effects 4.4 Dynamic Binary Choice Models: Maximum simulated likelihood

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Reading List

Textbooks

- Arellano, M. (2003), Panel Data Econometrics, Oxford University Press, Oxford (1st ed.)
- Baltagi, B.H. (2008), Econometric Analysis of Panel Data, John Wiley and Sons, Chichester (4th ed.)
- Cameron, A. Colin and Pravin K. Trivedi (2005), Microeconometrics: Methods and Applications Cambridge University Press, New York.
- Greene, W. H. (2012), Econometric Analysis, Prentice Hall, 7th Edition (chapters 11 and 13)
- Hsiao, C. (2003), Analysis of Panel Data, Cambridge University Press, Cambridge (2nd ed.).
- Lee, M. (2002), Panel Data Econometrics, Academic Press, San Diego (1st ed.).
- Murray, M. P. (2006), Econometrics: A Modern Introduction. Pearson AddisonWesley. (Chapter 16).
- Wooldridge, J.M. (2005), Econometric Analysis of Cross Section and Panel Data, MIT Press, Cambridge (2nd ed.).

Journal Articles

Linear Models

- Arellano, M. and S. Bond (1991), Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equation, Review of Economic Studies, 58(2), 277-297.
- Blundell, R. and S. Bond (1998), Initial Conditions and Moment Restrictions in Dynamic Panel Data Models, Journal of Econometrics, 87, 115-143.
- Bond, S. and F. Windmeijer (2005), Reliable Inference for GMM Estimators? Finite Sample Properties of Alternative Test Procedures in Linear Panel Data Models, Econometric Review, 24(1), 1-37
- Bonhomme, S. and Manresa, E. (2012) Grouped Patterns of Heterogeneity in Panel Data, CEMFI, Madrid. Mimeo.
- Eberhardt, M. And Teal, F. (2012) "Productivity Analysis in Global Manufacturing Production" School of Economics, University of Nottingham. Mimeo.
- Windmeijer, F. (2005), A Finite Sample Correction for the Variance of Linear Efficient Two-step Estimators, Journal of Econometrics, 126, 25-51.

Non-linear Models

- Honore, B. and E. Kiriakidou (2000), Panel Data Discrete Choice Models with Lagged Dependent Variables, Econometrica, 68(4), 839-874.
- Long, J. S., and J. Freese (2006) Regression Models for Categorical Dependent Variables Using Stata. 2nd ed. College Station, TX: Stata Press.
- Stewart, M. (2006) Maximum simulated likelihood estimation of random-effects dynamic probit models with autocorrelated errors, The Stata Journal 6 (2), 256-272.
- Vella, F. and M. Verbeek (1998), Two Step Estimation of Panel Data Models with Censored Endogenous Variables and Selection Bias, Journal of Econometrics, 90, 239-263.
- Wooldridge, J. M. (1995), Selection Corrections for Panel Data Models under Conditional Mean Independence Assumptions, Journal of Econometrics, 68, 115-132.
- Wooldridge, J. M. (2000), A Framework for Estimating Dynamic, Unobserved Effects Panel Data Models with Possible Feedbacks to Future Explanatory Variables, Economic Letters, 68, 245-250.

Course prerequisites

1. Classical Linear Regression Model, Finite and Asymptotic Properties of the LS Estimator
2. Heteroskedasticity and Autocorrelation
3. Endogeneity, IV and GMM
4. Maximum Likelihood and Specification Tests (W, LR, LM)
5. Cross-sectional Limited Dependent Variables Models (Probit, Logit, Tobit)