Econometric Analysis of Discrete Dependent Variables

Lecturer: Rainer Winkelmann (University of Zurich)

DIW Graduate Center Masterclass, 21./22. Nov. 2013

This short course provides an introduction to the analysis of the two most common types of discrete dependent variables, counts and ordered responses (of which binary responses are a special case). In discrete data models, we seek to predict the probability distributionof the dependent variable, conditional on covariates. Parametric and semi-parametric models are considered. Starting from the benchmark Poisson and (ordered) probit regression models, we consider generalizations arising from various departures, such as unobserved heterogeneity, state dependence, measurement error, endogeneity and selectivity. We review theoretical results as well as applications in fields such as health economics, labor economics, population economics and empirical industrial organization.

Lecture 1

Regression models for discrete dependent variables

Generalized linear models, quasi maximum likelihood

Lecture 2

Unobserved heterogeneity and state dependence in count data models

Lecture 3

Multi-index models for discrete dependent variables

Lecture 4

Ordered response models with fixed effects and endogenous switching

Reading list

Baetschmann, G., K. E. Staub and R. Winkelmann (2011) Consistent estimation of the fixed effects ordered logit model. University of Zurich Economics DP. No 4.

Baetschmann, G. and R. Winkelmann (2013) Occurrence dependence and zero-inflation in count data models (mimeo)

Boes, S. and R. Winkelmann (2010) The Effect of Income on General Life Satisfaction and Dissatisfaction, Social Indicators Research 95, 111–128.

Ferrer-i-Carbonell, A. and P. Frijters (2004) How Important is Methodology for the estimates of the determinants of Happiness?, Economic Journal, 114, 641-659.

Gourieroux, C., A. Monfort and A. Trognon (1984) Pseudo Maximum Likelihood Methods: Theory, Econometrica, 52:3(681--700)

Luechinger, S., A. Stutzer and R. Winkelmann (2010) Self-selection models for public and private sector job satisfaction, Research in Labor Economics 30, 233–251, 2010.

Mullahy, J. 1986, Specification and testing in some modified count data models, Journal of Econometrics 33: 341-365.

Papke, Leslie and Jeffrey M. Wooldridge (1996) Econometric Methods for Fractional Response Variables with an Application to 401 (K) Participation Rates, Journal of Applied Econometrics, 11:6(619--632)

Pohlmeier, W. and V. Ulrich 1995, An econometric model of the two-part decision making process in the demand for health care, Journal of Human Resources 30: 339-361.

Santos Silva and Tenreyo (2006) The Log of Gravity, Review of Economics and Statistics, 88:4(641--658)

Winkelmann, R. (1995) Duration Dependence and Dispersion in Count Data Models, Journal of Business and Economic Statistics, 13, 467-474.

Winkelmann, R. (2004) Health Care Reform and the Number of Doctor Visits – An Econometric Analysis, Journal of Applied Econometrics 19, 455-472.

Winkelmann, R. (2012) Copula bivariate probit models: with an application to medical expenditures, Health Economics, 21, 1444–1455.