Exam Questions
Microeconometrics 2006/2007

1. Introduction

   - Explain how it is possible to estimate the partial effect of the exogenous variables, even if ceteris paribus assumption is false
   - Write down the linear model in conditional expectation form and in the error form and explain why the conditional expectation form of the model is more realistic than the assumption that the regressors are deterministic.
   - What assumptions about the error term are related to random sample assumption? Give some examples when the random sample assumption can fail in a cross-section. How can we deal with such cases?

2. Ordinary least squares and instrumental variable estimation

   - In what case the omitted variable can result in the asymptotic bias of an estimator? When the effect of an omitted variable is negligible?
   - Explain what are the necessary conditions for an IV estimator to be consistent. Give an example when the IV estimator can be used to solve the omitted variable problem.
   - In what cases IV estimator can be unsatisfactory? How do we pretest for necessity of IV and validity of instruments?

3. Unobserved effects and panel analysis

   - Write down the linear unobserved effects model and give an example of the empirical problem in which an unobserved effect probably exists. Explain how a panel data structure can be used to improve the quality of estimates.
   - What is the difference between the random effects and fixed effects methods? What should be the basis of choice between them? How do we test for the need of use of the fixed effect estimator.
   - Explain the advantages and disadvantages of the fixed, random and first difference estimators.
   - Why dynamic panel data models cannot be estimated with either random or fixed effect estimator? Give an example of the method which can be used for consistent estimation of a dynamic panel data model.
   - When and why do we use the Hausmann and Taylor estimator? What are the advantages of this estimator.

4. Nonlinear models

   - Explain what do we mean by M-estimation, what should be the properties of the objective function, and what we mean by the identification of the model. Why the numerical optimization methods are often needed to find M-estimator?
   - Explain what we have to know about the structure of the model to estimate the parameters with the use of ML estimators. Identify advantages and disadvantages of Wald, Score (LM), and LR tests.

5. Count data models

   - What do we mean by the count data? Give an example when the Poisson model should be used and another one when the binomial regression model is better fitted the problem. Explain what are the limitations of the Poisson model.

6. Discrete dependent variable

   - What is a latent variable? Write down a model with the use of a latent variable. Explain how it is possible to estimate the utility function with the use of the conditional model for binary data.
   - Describe advantages and disadvantages of linear probability model, probit and logit models.
   - Explain the meaning of independence of irrelevant alternatives assumption and the difference between multinomial and conditional logits. Give examples of empirical problems which can be analyzed with these models.
   - Explain the difference between the ordered logit and hierarchical logit. Give an example of an empirical problem in which we should use the ordered choice model.

7. Nonrandom sample selection, attrition and stratified samples

   - What do we mean by truncated data? What model do we use for truncated data? Give an example of the use of the truncated data model.
   - Explain the differences and similarities between corner solutions outcomes and outcomes resulting from data censoring. What model should be used in this context.
   - Describe possible mechanisms of non-random sample selection and analyze the consequences of this problem for OLS estimation.
   - Explain why non-random selection of the sample can lead to asymptotic bias of the OLS estimator.
   - Describe the two stage estimation procedure for the Heckman model, explain when it should be used and give and an example of the empirical problem for which we use this model.

8. Policy response analysis

   - What do we mean by the policy response analysis? Explain how the we can use difference in differences estimator to estimate policy response analysis.
   - Explain the difference between average treatment effect and average treatment effect on the treated. Give an example of estimation of these effects.
   - Describe the problems related to estimation of the average treatment effect and econometric methods designed to solve them.