Fachbereich Rechts- und Wirtschaftswissenschaften

JOHANNES GUTENBERG UNIVERSITÄT MAINZ

Mainz School of Management and Economics

Lehrstuhl für Volkswirtschaftslehre, insbesondere Makroökonomik

Econometrics and Labour Markets

Seminar (Summer Term 2010)

Teachers

Michael Graber und Prof. Dr. Klaus Wälde

Important Dates

Registration Deadline: 22/01/2010

Introductory Session: 05/04/2010

1st office hour: 19/04/2010

2nd office hour: 20/06/2010

Deadline for turning in the thesis (by email): 15/07/2010

Seminar: 22/23 July 2010

Target Audience

The seminar is for diploma students in economics or business administration and bachelor students in their 5th semester. Knowledge in the area of econometrics and macroeconomics is useful. Participants of the courses "Applied Intertemporal Optimization" and "Microeconometrics" are particularly encouraged to participate in the seminar and will be given preferential consideration.

Registration

To register for the seminar, please send an e-mail to Michael Graber (Graber@uni-mainz.de). Besides your student ID number and field of study, you should enclose a list of two preferred topics. The registration deadline is Friday, 22 January 2010. A list of admitted students (including a waiting list) will be posted on our webpage by 29 January 2010. Participation will have to be confirmed by Friday, 5 February 2010, 12 p.m. Students whose seminar participation has been confirmed, but who subsequently withdraw from seminar participation will fail the course.

Contact

For further information please contact Michael Graber (Graber@uni-mainz.de).

Topics

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1 Sample Selection and Treatment Effects

Labor economists are often interested in identifiying the effect of a certain policy. Examples include effects of taxes on labour supply, effects of labour market regulation and minimum wages on wages and employment and evaluation of job training programs.

Suppose we want to identify the effect of participating in a job training program on future earnings. At the individual level, we observe the labour market outcomes of those who attend the job training program and we also observe the labour market outcomes of those who do not attend. However in order to truly identify the effect of the program on a participating individual, we would need to compare the observed outcome with the outcome that would have resulted had that person not participated in the training program. Obviously this is not possible. So one needs to find an estimate of the counterfactual (for example by using a control group) to identify the effect of the job training program. The principal econometric problem in the estimation of these treatment effects is selection bias. Considering for example that people who participate in a job training program may be on average higher motivated to find a new job compared to the untreated, it becomes obvious that identifiying the causal effect of the treatment is a difficult task to undertake, because selection into the program may be nonrandom.

- Topic 1: The estimation of wages is a prominent example for the sample selection problem. The student is expected to discuss the sample selection bias and to present the two step apporach to the selection problem following Heckman (1979).
- Topic 2: Different econometric methods are available to evaluate treatment effects (see e.g. Cameron and Trivedi, 2005, chap. 25). The student is expected to summarize these methods briefly and explain their differences. However, the focal point of the work should be a detailed explanation of the matching and propensity score estimators.

2 Wages and Education

There exist many studies exploring the direct causal relationship between schooling and earnings (see e.g. Card, 1999). It is also obvious to believe that returns to schooling vary with with other characteristics, e.g. what are the effects of family background characteristics on the returns of education? Do father's and mother's education play a role?

- Topic 3: The role of parental education is empirically investigated by Altonji and Dunn (1996) and the student is expected to present this paper.

Talking about inequality, Martinsa and Pereirab (2004) address the link between schooling and within-levels wage inequality by using a quantile regression approach for 16 countries.

- Topic 4: Quantile regression models are an important tool to analyze the conditional distribution of the dependent variable. Before presenting the paper by Martinsa and Pereirab (2004), the student is expected to present a brief introduction into the methodology of quantile regression models.

3 Search and Matching

It is well known that the neoclassical theory postulates an economy without frictions implying that the labor market would clear instantaneously, because workers can immediately choose to work for as many hours as they want at a given market wage. While this theory fails to describe the causes for unemployment in a satisfactory way, search and matching models are able to explain the coexistence of job vacancies and unemployed workers as an equilibrium phenomenon. The fundamental idea is that it takes time and other resources for unemployed workers and vacancies to find each other. Thus unlike the neoclassical theory postulates, trade in the labor market is time-consuming and uncoordinated. One can generally differ between two distinct strands in the literature.

3.1 Theoretical Background

The first strand is known as wage-posting equilibrium. The fundamental idea is that employers set the terms of employment and post wage offers, while workers search for the best wage. In particular, workers sequentially draw wage offers and decide whether or not to accept the offer.

- Topic 5: The student is expected to present a baseline search model in continuous time (see e.g. Cahuc and Zylberberg, 2004 or Rogerson, Shimer, and Wright, 2005) and to draw conclusions about the empirical predictions of this model by performing comparative static analysis.

The second strand is known as matching-bargaining equilibrium. This approach looks at the problem of frictional unemployment from a different angle. It emphasizes the costly and time-consuming nature of the search process of both firms and workers rather than search frictions due to the process of acquiring information about wages by workers. Its main goal is to analyze equilibrium flows into and out of unemployment. The fundamental idea is that there is a matching function bringing together both sides of the labor market and determining the number of agents becoming employed. One can think of a matching function like a production function, where output is the number of matches at any point in time and inputs are the number of unemployed individuals, the number of vacancies and some other influencing variables like search intensity of both.

- Topic 6: The student is expected to present a baseline matching model in continuous time (see Pissarides, 2000) and to draw conclusions about the empirical predictions of this model by performing comparative static analysis.

3.2 Empirical Application

In terms of the empirical implementation of search and matching models, there exist two distinct approaches: A reduced form approach and a structural estimation approach. In his essay Wolpin (1995) explains the difference as follows:

"[...] structural estimation refers to estimation that has as its intent recovery of the fundamental parameters of the theoretical optimization problem. Estimation methods that recover parameters that are (often unspecified) functions of the fundamental parameters, such as linear approximations of the decision functions not explicitly derived from the decision functions themselves, fall into the reduced form category. Empirical work that is conducted absent an explicit optimization problem is by definition reduced form."

A distinctive feature of structural estimation is therefore its heavy dependence on economic theory and implicitly on the reliability of the underlying assumptions. Consequently empirical results may not be robust with respect to departures form these assumptions in general. In other words, the structural approach may impose restrictions on agents'

behavior that are unjustified. On the other hand, reduced form estimation methods reveal no information about the structural parameters of the underlying theoretical model.

3.2.1 Reduced Form Approach: Duration Models

Typical reduced form approaches used in the literature are duration models (see Lancaster, 1990). Good examples of parametric reduced-form type duration analysis in the light of search theory is given by Lancaster (1979).

- Topic 7: The student is expected to give a brief overview of basic concepts from survival analysis (see e.g. Cameron and Trivedi, 2005 or Wooldridge, 2001) and is expected to present the paper by Lancaster (1979).

A popular reduced form approach in labor economics is the so called mixed proportional hazard model (see van den Berg, 2001). The mixed proportional hazard model specifies the hazard rate as a multiplication of three determinants. First, a regression function called "systematic part" captures the effect of observed explanatory variables. Second, a function called "baseline hazard" captures the variation of the hazard over time and third, a random variable accounts for unobserved heterogeneity.

- Topic 8: The student is expected to present the mixed proportional hazard model (see van den Berg, 2001).

3.2.2 Structural Estimation Approach

Search and matching models postulate that certain events occur randomly from an individual's point of view. In general search and matching models generate probability distributions for observed labor market outcomes like employment and unemployment durations. By using microdata on individual labor market outcomes one can then estimate the structural parameters of these models by applying the Maximum Likelihood principle.

- Topic 9: The student is expected to present the way of structurally estimating the classical job search model as shown in Eckstein and van den Berg (2007).

Structural models have the nice feature that they allow for a careful policy evaluation. Launov and Wälde (2009) analyze welfare effects of the recent labor market in Germany (Hartz IV). They formulate a matching model with endogenous search effort and non-stationary unemployment benefits. The theoretical model is then structurally estimated by Maximum Likelihood using a German micro data set (SOEP). The structural estimates then allow for evaluating the recent labor market reform.

- Topic 10: The student is expected to give a brief overview of the theoretical model of Launov and Wälde (2009). He then should present the econometric model and its results.

References

Altonji, J. G., and T. A. Dunn (1996): "The Effects of Family Characteristics on the Return to Education," *The Review of Economics and Statistics*, 78, 692–704.

Cahuc, P., and A. Zylberberg (2004): *Labor Economics*. Cambridge, MA: MIT Press.

Cameron, C. A., and P. K. Trivedi (2005): *Microeconometrics : Methods and Applications*. Cambridge University Press.

Card, D. (1999): "The causal effect of education on earnings," 3, 1801–1863.

Eckstein, Z., and G. J. van den Berg (2007): "Empirical Labor Search: A Survey," *Journal of Econometrics*, 136(2), 531–564.

Heckman, J. J. (1979): "Sample Selection Bias as a Specification Error," *Econometrica*, 47(1), 153–61.

Lancaster, T. (1979): "Econometric Methods for the Duration of Unemployment," *Econometrica*, 47(4), 939–956.

——— (1990): *The Econometric Analysis of Transition Data*. Cambridge University Press.

Launov, A., and K. Wälde (2009): "Estimating incentive and welfare effects of non-stationary unemployment benefits," *working paper, see www.waelde.com*.

Martinsa, P. S., and P. T. Pereirab (2004): "Does education reduce wage inequality? Quantile regression evidence from 16 countries," *Labour Economics*, 11, 355–371.

Pissarides, C. A. (2000): *Equilibrium Unemployment Theory*. MIT press, 2 edn.

Rogerson, R., R. Shimer, and R. Wright (2005): "Search-Theoretic Models of the Labor Market: A Survey," *Journal of Economic Literature*, 43(4), 959–988.

VAN DEN BERG, G. J. (2001): *"Duration Models: Specification, Identification, and Multiple Durations" in Handbook of Econometrics*, vol. 5. Amsterdam: Elsevier Science/North-Holland.

WOLPIN, K. I. (1995): *Empirical Methods for the Study of Labor Force Dynamics*. Harwood Academic Publ.

WOOLDRIDGE, J. M. (2001): *Econometric Analysis of Cross Section and Panel Data*. MIT Press.