WXC

Structural Models and Policy Evaluation

Course title - Intitulé du cours	Structural Models and Policy Evaluation
Level / Semester - Niveau /semestre	M2 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	Olivier DE GROOTE
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Students with questions about the course material are encouraged to ask them during or at the end of class before requesting a meeting with the lecturer.

Meetings should be requested by email:

- Olivier De Groote olivier.de-groote@tse-fr.eu

Course Objectives - Objectifs du cours :

In this course we introduce the structural approach of econometrics, focusing on the intuition behind the use and estimation of structural models and how they can be used for policy making. We show how to estimate the parameters of core components of an economic model (utility, profits, ...) that rationalize the data we observe. Under certain conditions, it can then be used to perform simulations of policies that have not yet taken place, to calculate the welfare effects of different policies, and/or understand the mechanisms that drive the effects of a policy change. Moreover, structure can help to identify the full distribution of causal effects of agents' choices when treatment effects are heterogeneous.

The focus is on applying the methods and interpretation of the results. We show how they can be estimated in STATA and we illustrate their importance using applications on several important questions in labor economics, development economics and related fields.

Prerequisites - Pré requis:

Students should be familiar with basic concepts in econometrics and program evaluation and the statistical software STATA. This includes OLS regression, instrumental variables, maximum likelihood, and average treatment effects. This is covered in M1 intermediate econometrics + M1 program evaluation/M1 applied econometrics.

Practical information about the sessions - Modalités pratiques de gestion du cours :

Students are expected to read the assigned papers before the class and participate actively in class discussions.

Grading system - Modalités d'évaluation :

Grades will be based on two problem sets, in-class presentations and a final exam. You have to choose one paper to present during a class from a provided list (10% of the grade). Problem sets and the final exam will each account for 30% of the grade.

Bibliography/references - Bibliographie/références :

The slides with the explanation in class will be sufficient to understand the basics of each method. For further reading, we recommend the following references for applied econometricians:

Arcidiacono, P., Ellickson, P.B., 2011. Practical Methods for Estimation of Dynamic Discrete Choice Models. *Annual Review of Economics* 3, 363–394.

Berry, S.T., 1994, Estimating Discrete-Choice Models of Product Differentiation, *RAND Journal of Economics*.

Blundell, R., Costa Dias, M., 2009. Alternative Approaches to Evaluation in Empirical Microeconomics. *The Journal of Human Resources* 44, 565–640.

Cornelissen, T., Dustmann, C., Raute, A., Schönberg, U., 2016. From LATE to MTE: Alternative methods for the evaluation of policy interventions. *Labour Economics* 41, 47–60.

Nevo, A., 2000. A Practitioner's Guide to Estimation of Random-Coefficients Logit Models of Demand. *Journal of Economics & Management Strategy* 9, 513–548.

Train, K., 2009. Discrete choice methods with simulation. Cambridge University Press, Cambridge; New York.

Wooldridge (2002), Econometric Analysis of Cross Section and Panel Data, Chapter 15.

This and other sources from the econometrics literature are used to explain the methods in the context of several applications and policy questions to address. Other sources include:

Angrist, J.D., and Pischke J.S., 2010, The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con Out of Econometrics, Journal of Economic Perspectives. *Journal of Economic Perspectives*.

Aakvik, A., Heckman, J. J. & Vytlacil, E. J., 2005. Estimating treatment effects for discrete outcomes when responses to treatment vary: an application to Norwegian vocational rehabilitation programs. *Journal of Econometrics* 125, 15–51.

Arcidiacono, P. & Jones, J. B., 2003. Finite mixture distributions, sequential likelihood and the EM algorithm. *Econometrica* 71, 933–946.

Berry, S.T., J. Levinsohn, and A. Pakes,1995, Automobile Prices in Market Equilibrium, *Econometrica*.

Heckman, J. J. & Vytlacil, 2005. E. Structural equations, treatment effects, and econometric policy evaluation. *Econometrica* 73, 669–738.

Heckman, J. J., Humphries, J. E. & Veramendi, G., 2016. Dynamic treatment effects. *Journal of Econometrics* 191, 276–292.

Imbens, G. W. & Angrist, J. D., 1994. Identification and Estimation of Local Average Treatment Effects. *Econometrica* 62, 467.

Nevo, A., 2001, Measuring Market Power in the Ready-to-Eat Cereal Industry, *Econometrica*.

Nevo, A. and M.D. Whinston, 2010, Taking the Dogma Out of Econometrics: Structural Modeling and Credible Inference, *Journal of Economic Perspectives*.

Rust, J., 1987. Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher. *Econometrica* 55, 999–1033.

Session planning - Planification des séances :

Part 1: introduction to structural models and static discrete choice (12h)

- Structure of the classes
    - Introduction to structural models
    - Logistic regression as a random utility model
    - Discrete choice models and alternative distributional assumptions (probit, logit, nested logit, ordered response)
    - Estimation of discrete choice models with individual level data (choices or rankings)
    - Estimation of discrete choice models with aggregate data (market shares)
    - Endogeneity in non-linear models

- Applications in public policy:
    - Accessibility to higher education[1]
    - School choice[2]
    - Antitrust[3]

[1] Declercq, Koen, and Frank Verboven. 2015. "Socio-Economic Status and Enrollment in Higher Education: Do Costs Matter?" *Education Economics* 23 (5): 532–56. ; Arcidiacono, Peter, Josh Kinsler, and Tyler Ransom. 2020. "Asian American Discrimination in Harvard Admissions." NBER Working Paper.

[2] Abdulkadiroglu, A., Pathak, P.A., Schellenberg, J, and Walters, C.R., 2020. Do parents value school effectiveness? *American Economic Review*.; Burgess, S., Greaves, E., Vignoles, A., Wilson, D., 2014. What Parents Want: School Preferences and School Choice. *The Economic Journal*.

[3] Nevo, A., 2000. Mergers with differentiated products: The case of the ready-to-eat cereal industry. *The RAND Journal of Economics.*

- Subsidies for technology adoption[4]

Part 2: treatment effect heterogeneity (9h)

- Structure of the classes
  - Treatment effect heterogeneity: estimating local, marginal and average treatment effects, and the impact of adding structure
  - Factor models and distributional treatments effects
  - Practical tools to interpret results of non-linear models

- Applications in public policy
  - Seats in college majors[5]
  - Childcare expansion[6]
  - Vocational rehabilitation programs[7]

Part 3: dynamic discrete choice models (9h)

- Structure of the classes
  - Recap static discrete choice
  - Forward looking behavior and the impact on counterfactual simulations
  - Dynamic treatment effects

- Applications in public policy
  - College subsidies and tuition[8]
  - Affirmative action in college[9]

Distance learning – Enseignement à distance :

We will prioritize face-to-face classes if rules allow and if all students are able to be present. Otherwise we will use Zoom for online classes. Students will be required to have their cameras on

[4] Dupas, P. 2014. Short-Run Subsidies and Long-Run Adoption of New Health Products: Evidence from a Field Experiment. *Econometrica*

[5] Kirkeboen, L. J., Leuven, E. & Mogstad, M. Field of Study, Earnings, and Self-Selection. *The Quarterly Journal of Economics* 131, 1057–1111 (2016).

[6] Cornelissen, T., Dustmann, C., Raute, A. & Schönberg, U. Who Benefits from Universal Child Care? Estimating Marginal Returns to Early Child Care Attendance. *Journal of Political Economy* 126, 2356–2409 (2018).; Felfe, C., and Lalive, R. 2018. "Does Early Child Care Affect Children's Development?" *Journal of Public Economics* 159: 33–53.

[7] Aakvik, A., Heckman, J. J. & Vytlacil, E. J. Estimating treatment effects for discrete outcomes when responses to treatment vary: an application to Norwegian vocational rehabilitation programs. *Journal of Econometrics* 125, 15–51 (2005). ; Dean, D., Pepper, J. V., Schmidt, R. & Stern, S. The Effects of Vocational Rehabilitation Services for People with Mental Illness. *Journal of Human Resources* 52, 826–858 (2017).

[8] Keane, M. P. & Wolpin, K. I. The Career Decisions of Young Men. *Journal of Political Economy* 105, 473–522 (1997). ; Todd, P. E. & Wolpin, K. I. Assessing the impact of a school subsidy program in Mexico: Using a social experiment to validate a dynamic behavioral model of child schooling and fertility. *The American economic review* 1384–1417 (2006).

[9] Arcidiacono, P. Affirmative action in higher education: How do admission and financial aid rules affect future earnings? *Econometrica* 73, 1477–1524 (2005).

and questions during the class will be encouraged. For this reason, we require all students to have webcams.