

PLAN DE COURS

ECN 7923A

SUJETS SPÉCIAUX – METHODS FOR EMPIRICAL MICROECONOMICS

AUTOMNE 2017

3 CR.

Professeur : **LEWIS, Joshua**
Disponibilité : mardi, de 11h30 à 12h30, local C-6032
Courriel : joshua.lewis@umontreal.ca
Téléphone : 514 240-4972

Professeur : **MARCOUX, Mathieu**
Disponibilité : mardi, de 13h à 14h, local C-6033
Courriel : mathieu.marcoux@umontreal.ca
Téléphone : 514 343-6111, poste 2399

**** **Pour connaître les dates importantes du trimestre (modification, abandon, etc.), consultez le calendrier des études :** http://fas.umontreal.ca/fileadmin/Documents/FAS/fas/Documents/Calendrier/Calendrier_2017-2018.pdf ****

Une version électronique de ce plan de cours est disponible sur Internet. On peut y accéder par la page d'accueil du Département de sciences économiques (<http://sceco.umontreal.ca/accueil/>). Veuillez cependant noter que les informations qui suivent peuvent faire l'objet de modifications au cours du trimestre. Le cas échéant, le professeur vous avisera en classe ou, s'il y a lieu, au moyen du calendrier affiché sur le site StudiUM du cours. Par ailleurs, pour la présentation de vos travaux pratiques, vous trouverez notre Guide à <http://sceco.umontreal.ca/ressources-services/ressources-formulaires/>.

OBJECTIF DU COURS

This course is directed at graduate students conducting research in the “applied micro” fields, especially (but not exclusively) labour economics, development economics, public economics, health economics, economic history, and empirical industrial organization. The tools and techniques presented in the course are central to those used in applied research. The first half of the course will focus on the identification of causal relationships using regression-based analysis. The course will present both the theory behind these techniques, and draw on numerous empirical examples from recent work in labour, development, public, etc. The second half of the course will explore structural modelling in econometrics, paying special attention to how this approach has been applied to the field of empirical industrial organization. Some methods commonly used when estimating structural models, e.g. simulation-based estimation, generalized method of moments and partial identification, will also be covered.

RÉFÉRENCES

The core lecture material for the first six courses is based on:

Joshua D. Angrist & Jorn-Steffen Pischke, *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton University Press, 2009.

Lectures 7 to 12 are mostly based on seminal papers and influential literature surveys. In particular, many of the topics covered in the second half of the course are discussed in the following chapters from the Handbook of Econometrics, Volume 6:

Akerberg Daniel, C. Lanier Benkard, Steven Berry & Ariel Pakes, *Econometric Tools for Analyzing Market Outcomes*, In: Heckman James and Edward E. Leamer, The Handbook of Econometrics Vol. 6A, Amsterdam, 2007, pp. 4171-4276.

Peter C. Reiss & Frank A. Wolak, *Structural Econometric Modeling: Rationales and Examples from Industrial Organization*, In: Heckman James and Edward E. Leamer, The Handbook of Econometrics Vol. 6A, Amsterdam, 2007, pp. 4277-4415.

ÉVALUATION

LE PLAGIAT À L'UDEM EST SANCTIONNÉ PAR LE *RÈGLEMENT DISCIPLINAIRE SUR LA FRAUDE ET LE PLAGIAT CONCERNANT LES ÉTUDIANTS*. POUR PLUS DE RENSEIGNEMENTS, CONSULTEZ LE SITE WWW.INTEGRITE.UMONTREAL.CA.

- Referee report 10 %
- Midterm exam..... 30 %
- Empirical and simulation exercise 30 %
- Research proposal..... 30 %

Selon le règlement pédagogique (article 9.9 reproduit ci-dessous), l'étudiant doit motiver toute absence à une évaluation; pour ce faire, il faut s'adresser au Secrétariat de son département d'attache et non pas au professeur. Seul un motif imprévu et hors du contrôle de l'étudiant peut être acceptable.

« L'étudiant doit motiver, par écrit, toute absence à une évaluation ou à un cours faisant l'objet d'une évaluation continue **dès qu'il est en mesure de constater qu'il ne pourra être présent à une évaluation** et fournir les pièces justificatives. [...] il doit [...] **fournir les pièces justificatives dans les sept jours suivant l'absence**. Le doyen ou l'autorité compétente détermine si le motif est acceptable en conformité des règles, politiques et normes applicables à l'Université. Les pièces justificatives doivent être dûment datées et signées. De plus, le **certificat médical doit préciser les activités auxquelles l'état de santé interdit de participer, la date et la durée de l'absence, il doit aussi permettre l'identification du médecin**. »

CONTENU DU COURS

1. Introduction to the “Experimental Ideal” for understanding causality and credible research design

- Introduction the experimental ideal
- The ‘Rubin Causal Model’
- Research with experiments

Readings:

A&P, Chapters 1 and 2.

Angrist, J. D., and J.S. Pischke. 2010. “The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con out of Econometrics,” *Journal of Economic Perspectives*, 2 (Spring): 3-30.

Al-Ubaydli, O., J. A. List, and D. L. Suskind. 2017. "What Can We Learn from Experiments? Understanding the Threats to Scalability of Experimental Results," *American Economic Review P&P* (Forthcoming).

Bertrand, M., S. Djankov, R. Hanna, and S. Mullainathan. 2007. "Obtaining a Driver's License in India: An Experimental Approach to Studying Corruption," *Quarterly Journal of Economics*: 1639-1676.

Chetty, R., J. N. Friedman, N. Hilger, E. Saez, D.W. Schanzenbach, and D. Yagan. 2011. "How Does Your Kindergarten Classroom Affect Your Earnings? Evidence from Project Star" *Quarterly Journal of Economics* 126 (4): 1593-1660.

2. Detailed review of OLS, Regression Analysis, and the Matching Estimator

- OLS Properties
- The 'Conditional Expectations Function' (CEF)
- Practical considerations for regression analysis

Readings:

A&P, Chapters 3.

Altonji, J., T. Elder, and C. Taber. 2005. "Selection on Observed and Unobserved Variables: Assessing the Effectiveness of Catholic Schools," *Journal of Political Economy*, February.

Oster, E. "Unobserved Selection and Coefficient Stability: Theory and Evidence. *Journal of Business and Economic Statistics*, (Forthcoming).

Robert LaLonde (1986): "Evaluating the Econometric Evaluations of Training Programs with Experimental Data," *American Economic Review* 76, September, pp. 604-620.

Dehejia and S. Wahba (1999): "Causal Effects in Nonexperimental Studies: Re-evaluating the Evaluation of Training Programs," *JASA* 94.

Jeff Smith and Petra Todd (2001): "Reconciling Conflicting Evidence on the Performance of Propensity Score Matching Methods," *American Economic Review* 91, May.

Jeff Smith and Petra Todd (2005a): "Does Matching Overcome LaLonde's Critique of Nonexperimental Estimators?" *Journal of Econometrics*, 2005(1-2).

Rajeev Dehejia (2005): "Practical Propensity Score Matching (Response to Smith and Todd)," *Journal of Econometrics*, 2005(1-2).

Jeff Smith and Petra Todd (2005): "Practical Propensity Score Matching (Rejoinder to Dehjjia)?" *Journal of Econometrics*, 2005(1-2).

Rajeev Dehejia (2005): "Does Matching Overcome LaLonde's Critique of Nonexperimental Estimators? A Post-script (Response to Smith and Todd Rejoinder)," Unpublished Manuscript.

3. Instrumental Variables

- IV and Causality
- The Wald Estimator
- Heterogeneous treatment effects and LATE
- Empirical examples and practical considerations

Readings:

A&P Chapter 4

Joshua Angrist (1990): "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records," *American Economic Review*.

Josh Angrist and Alan Krueger (1991): "Does Compulsory Schooling Attendance Affect Schooling and Earnings?" *Quarterly Journal of Economics* 106.

Josh Angrist (1998): "Estimating the Labor Market Impact of Voluntary Military Service Using Social Security Data on Military Applicants," *Econometrica*.

John Bound, David Jaeger, and Regina Baker (1995): "Problems with Instrumental Variables when the Correlation Between the Instruments and Endogenous Variable is Weak," *Journal of the American Statistical Association*.

Gerald Oettinger (1999): "An Empirical Analysis of the Daily Labor Supply of Stadium Vendors," *Journal of Political Economy*, 107(2).

Guido Imbens and Josh Angrist (1994): "Identification and Estimation of Local Average Treatment Effects," *Econometrica*, Vol. 62, No. 2, pp. 467-475.

Angus Deaton (2009): "Instruments of Development: Randomization in the Tropics, and the Search for the Elusive Keys to Economic Development," Manuscript, Princeton University.

Guido Imbens (2009): "Better LATE than Nothing: Some Comments on Deaton (2009) and Heckman and Urzua (2009)," Manuscript, Princeton University.

4. Panel Data and Difference in Differences

- First difference and fixed effects regressions
- Difference in difference regressions and policy evaluation

Readings:

A&P Chapter 5.

David Card (1990): "The Impact of the Mariel Boatlift on the Miami Labor Market," *Industrial and Labor Relations Review*, 1990.

Ashenfelter, Orley, and Alan B. Krueger (1994): "Estimates of the Economic Returns to Schooling From a New Sample of Twins," *American Economic Review* 84, (5) (December 1994): 1157-73.

Card, David (1996): "The Effect of Unions on the Structure of Wages: A Longitudinal Analysis," *Econometrica* 64, (4) (July 1996): 957-79.

Ward, C. (2014). "Influenza Vaccination Campaigns: Is an Ounce of Prevention Worth a Pound of Cure?" *AEJ: Applied*, 6(1): 38-74.

5. Regression discontinuity design

- Fuzzy RD

- Sharp RD
- Practical considerations

Readings:

A&P Chapter 6.

David Lee and Thomas Lemieux (2009): "Regression Discontinuity Designs In Economics," NBER Working Paper #14723

Joshua Angrist and Victor Lavy (1999): "Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement," *Quarterly Journal of Economics*, pp. 533-575.

Lee, D., E. Moretti, and M. J. Butler (2004): "Do Voters Affect or Elect Policies? Evidence from the U.S. House," *Quarterly Journal of Economics*, pp. 807-859.

Thomas Lemieux and Kevin Milligan (2008): "Incentive Effects of Social Assistance: A Regression Discontinuity Approach," *Journal of Econometrics*.

Thomas Fugiwara (2015). "Voting Technology, Political Responsiveness, and Infant Health: Evidence from Brazil," *Econometrica*, 83(2): 423-464.

6. Clustering and Standard Errors

- Clustered standard errors, Moulton correction, and other techniques for dealing with grouped data

Readings:

A&P Chapter 8.

Brent Moulton (1986): "Random Group Effects and the Precision of Regression Estimates," *Journal of Econometrics* 32, pp. 385-97.

7. Introduction to structural econometrics and empirical industrial organization

- Definition of structural modeling
- Justification
- Example: analysis of mergers

Readings:

Leamer E (1983), "Let's Take the Con Out of Econometrics", *The American Economic Review*, Vol. 73, No. 1, pp. 31-43.

Nevo A and M Whinston (2010), "Taking the Dogma out of Econometrics: Structural Modeling and Credible Inference", *The Journal of Economic Perspectives*, Vol. 24, No. 2, pp. 69-81

Reiss P & F Wolak, *Structural Econometric Modeling: Rationales and Examples form Industrial Organization*, In: Heckman James and Edward E. Leamer, *The Handbook of Econometrics* Vol. 6A, Amsterdam, 2007, pp. 4277-4415, Sections 1-4.

Hastings J (2004), "Vertical Relationships and Competition in Retail Gasoline Markets: Empirical Evidence from Contract Changes in Southern California", *The American Economic Review*, Vol. 94, No. 1, pp. 317-328.

Nevo A (2000), "Mergers with Differentiated Products: The Case of the Ready-to-Eat Cereal Industry", *The RAND Journal of Economics*, Vol. 31, No. 3, pp. 395-421.

8. Demand of differentiated products: Models

- Simultaneous equations of supply and demand
- The product space
- The characteristic space

Readings:

Ackerberg D, CL Benkard, S Berry and A Pakes, *Econometric Tools for Analyzing Market Outcomes*, In: Heckman James and Edward E. Leamer, *The Handbook of Econometrics* Vol. 6A, Amsterdam, 2007, pp. 4171-4276, Section 1.

Reiss P & F Wolak, *Structural Econometric Modeling: Rationales and Examples form Industrial Organization*, In: Heckman James and Edward E. Leamer, *The Handbook of Econometrics* Vol. 6A, Amsterdam, 2007, pp. 4277-4415, Sections 5-7.

Berry S (1994), "Estimating Discrete-Choice Models of Product Differentiation", *The RAND Journal of Economics*, Vol. 25, No. 2, pp. 242-262.

Berry S, J Levinsohn and A Pakes (1995), "Automobile Prices in Market Equilibrium", *Econometrica*, Vol. 63, No. 4, pp. 841-890.

Berry S, J Levinsohn and A Pakes (2004), "Differentiated Products Demand Systems from a Combination of Micro and Macro Data: The New Car Market", *Journal of Political Economy*, Vol. 112, No. 1, pp. 68-105.

9. Demand of differentiated products: Econometrics

- Discrete choice models
- Random coefficients
- Simulation-based estimation
- Generalized method of moments

Readings:

Train K, *Discrete Choice Methods with Simulation*, Cambridge, 2009, Chapters 2, 3 and 6.

Nevo A (2000), "A Practitioner's Guide to Estimation of Random-Coefficients Logit Models of Demand", *Journal of Economics and Management Strategy*, Vol. 9, No. 4, pp. 513-548.

Hansen L (1982), "Large Sample Properties of Generalized Method of Moments Estimators", *Econometrica*, Vol. 50, No. 4, pp. 1029-1054.

Wooldridge J, *Econometric Analysis of Cross Section and Panel Data*, MIT Press, 2013, Chapter 14.

10. Production function estimation

- Endogeneity and selection problems
- Instrumental variables
- Control function approach
- Identification issues

Readings:

Ackerberg D, CL Benkard, S Berry and A Pakes, *Econometric Tools for Analyzing Market Outcomes*, In: Heckman James and Edward E. Leamer, *The Handbook of Econometrics Vol. 6A*, Amsterdam, 2007, pp. 4171-4276, Section 2.

Griliches Z and Mairesse J (1995), "Production Functions: The Search for Identification", *NBER Working Paper No. 5067*.

Olley S and A Pakes (1996), "The Dynamics of Productivity in the Telecommunications Equipment Industry", *Econometrica*, Vol. 64, No. 6, pp. 1263-1297.

Ackerberg D, K Caves and G Frazer (2015), "Identification Properties of Recent Production Function Estimators", *Econometrica*, Vol. 83, No. 6, pp. 2411-2451.

Gandhi A, S Navarro and D Rivers (2017), "On the identification of Gross Output Production Functions", *Working Paper*.

11. Partial identification

- Motivation
- Moment inequalities
- Sharpness
- Inference

Readings:

Manski C, *Partial Identification of Probability Distributions*, Springer, 2002.

Tamer E (2010), "Partial Identification in Econometrics", *Annual Review of Economics*, Vol. 5, No. 1, pp. 167-195.

Ho K and A Rosen (2016), "Partial Identification in Applied Research: Benefits and Challenges", *Working Paper*.

Canay I and A Shaikh (2016), "Practical and Theoretical Advances in Inference for Partially Identified Models", *Working Paper*.

Andrews D and G Soares (2010), "Inference for Parameters Defined by Moment Inequalities Using Generalized Moment Selection", *Econometrica*, Vol. 78, No. 1, pp. 119-157.

Chernozhukov V, H Hong and E Tamer (2007), "Estimation and Confidence Regions for Parameter Sets in Econometric Models", *Econometrica*, Vol. 75, No. 5, pp. 1243-1284.

Pakes A, J Porter, K Ho and J Ishii (2015), "Moment Inequalities and Their Application", *Econometrica*, Vol. 83, No. 1, pp. 315-334.

12. Empirical games

- Complete information
- Incomplete information
- Flexible information structure

Readings:

Bresnahan T and P Reiss (1990), "Entry in Monopoly Markets", *The Review of Economic Studies*, Vol. 57, No. 4, pp. 531-553.

Bresnahan T and P Reiss (1991a), "Empirical Models of Discrete Games", *Journal of Econometrics*, Vol. 48, No. 1, pp. 57-81.

Bresnahan T and P Reiss (1991b), "Entry and Competition in Concentrated Markets", *Journal of Political Economy*, Vol. 99, No. 5, pp. 977-1009.

Tamer E (2003), "Incomplete Simultaneous Discrete Response Model with Multiple Equilibria", *The Review of Economic Studies*, Vol. 70, No. 1, pp. 147-165.

Ciliberto F and E Tamer (2009), "Market Structure and Multiple Equilibria in Airline Markets", *Econometrica*, Vol. 77, No. 6, pp. 1791-1828.

Seim K (2006), "An Empirical Model of Firm Entry with Endogenous Product-Type Choices", *The RAND Journal of Economics*, Vol. 37, No. 3, pp. 619-640.

De Paula A (2013), "Econometric Analysis of Games with Multiple Equilibria", *Annual Review of Economics*, Vol. 5, No. 1, 107-131.