

STRUCTURAL MODELS READING GROUP

SPRING 2020

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Course Description:

This course will provide an introduction to structural models. The goal will be to learn how structural models have been applied in political economy, identify contributions made by past research and the standards that define high quality work, and replicate existing models. In the first week we will have an introductory discussion about structural models as alternatives to carry out empirical work. During the rest of the course we will devote ourselves to discuss and replicate those papers in the “Papers to replicate” section. All other additional readings are optional and they will serve as a reference for the student who wants to replicate other structural models, read about them, or learn more about the methods underpinning structural models.

Requirements:

Weekly discussions of assigned readings and four papers to be replicated.

Introduction: The Causal Versus Structural Debate - Week 1

*Note: readings marked with (***) are optional depending on pace.*

1. Heckman, J. J. (2000). Causal Parameters and Policy Analysis in Economics: A Twentieth Century Retrospective. *Quarterly Journal of Economics*, 115(1):45–97***
2. Deaton, A. (2010). Instruments, Randomization, and Learning about Development. *Journal of Economic Literature*, 48:424–455
3. Heckman, J. J. and Urzua, S. (2010). Comparing IV with structural models: What simple IV can and cannot identify. *Journal of Econometrics*, 156:27–37***
4. Imbens, G. W. (2010). Better LATE Than Nothing: Some Comments on Deaton (2009) and Heckman and Urzua (2009). *Journal of Economic Literature*, 48:399–423***
5. 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*, 24(2):3–30

6. Nevo, A. and Whinston, M. D. (2010). Taking the Dogma out of Econometrics: Structural Modeling and Credible Inference. *Journal of Economic Perspectives*, 24(2):69–82
7. Rust, J. (2010). Comments on: “Structural vs. atheoretic approaches to econometrics” by Michael Keane. *Journal of Econometrics*, 156:21–24***
8. Lewbel, A. (2019). The identification zoo: Meanings of identification in econometrics. *Journal of Economic Literature*, 57(4), 835-903.

Papers to replicate - weeks 2-13:

*Note: readings marked with (***) are optional depending on pace.*

9. Nevo, Aviv. “A practitioner's guide to estimation of random-coefficients logit models of demand.” *Journal of Economics & Management Strategy* 9.4 (2000): 513-548.
10. Stromberg, D. (2008). How the Electoral College Influences Campaigns and Policy: The Probability of Being Florida. *American Economic Review*, 98(3):769–807.
11. Crisman-Cox, Casey, and Michael Gibilisco. “Audience Costs and the Dynamics of War and Peace.” *American Journal of Political Science*, forthcoming.
12. Ascencio, Sergio J., and Miguel R. Rueda. “Partisan Poll Watchers and Electoral Manipulation.” *American Political Science Review* 113, no. 3 (2019): 727-742.
13. Iaryczower, Matias and Matthew Shum, “The Value of Information in the Court: Get it Right, Keep it Tight,” with Matthew Shum. *American Economic Review*, Vol. 102, No. 1, Feb. 2012, pp. 202-237.***
14. Finan, Fred, Eric Avis, Claudio Ferraz. “Do Government Audits Reduce Corruption? Estimating the Impacts of Exposing Corrupt Politicians.” Forthcoming, *Journal of Political Economy*.***

References:

*Note: readings marked with (***) DO NOT have replication materials available.*

A. Applications with dynamics

- S1. Lim, Claire, “Preferences and Incentives of Appointed and Elected Public Officials”, *American Economic Review*, 2013, 103 (4), pp.1360-1397.
- S2. Lim, Claire SH, and Ali Yurukoglu. “Dynamic natural monopoly regulation: Time inconsistency, moral hazard, and political environments.” *Journal of Political Economy* (2015).

B. Voting in Committees and Judicial Politics

- S3. Iaryczower, Matias, Xiaoxia Shi, and Matthew Shum. “Can words get in the way? the effect of deliberation in collective decision-making.” Forthcoming *Journal of Political Economy*.
- S4. Iaryczower, Matias, Gabriel Lopez Moctezuma and Adam Meiowitz. “Career Concerns and the Dynamics of Electoral Accountability?.” Working Paper.

Related:

- a. Iaryczower, Matias, Garrett Lewis, and Matthew Shum. "To elect or to appoint? Bias, information, and responsiveness of bureaucrats and politicians." *Journal of Public Economics* 97 (2013): 230-244.***
- b. Iaryczower, Matias, and Gabriel Katz. "More than politics: Ability and ideology in the British appellate committee." *The Journal of Law, Economics, and Organization* 32.1 (2015): 61-93.***
- c. Lopez-Moctezuma, Gabriel. *Sequential Deliberation in Collective Decision-Making: The Case of the FOMC*. Working Paper, 2015.***
- d. Spenkuch, Jorg, Pablo Montagnes, and Daniel Magleby. "Backward Induction in the Wild? Evidence from Sequential Voting in the US Senate." (2017). (forthcoming *American Economic Review*)***
- e. Ash, Elliott, and W. Bentley MacLeod. "Intrinsic motivation in public service: Theory and evidence from state supreme courts." *Journal of Law and Economics* 58.4 (2015): 863-913.***

C. Voting in Large Elections

- S5. Kendall, Chad, Tommaso Nannicini, and Francesco Trebbi. "How do Voters Respond to Information? Evidence from a Randomized Campaign." *American Economic Review* 105.1 (2014): 322-353.
- S6. Sieg, Holger, and Chamna Yoon. "Estimating Dynamic Games of Electoral Competition to Evaluate Term Limits in US Gubernatorial Elections." *American Economic Review* (2016).
- S7. Kawai, Kei, and Yasutora Watanabe. "Inferring strategic voting." *American Economic Review* 103.2 (2013): 624-662.
- S8. Rekkas, Marie. "The impact of campaign spending on votes in multiparty elections." *The Review of Economics and Statistics* 89.3 (2007): 573-585.***
- S9. Gordon, Brett R., and Wesley R. Hartmann. "Advertising Competition in Presidential Elections." *Quantitative Marketing and Economics* 14.1 (2016): 1-40.***

Related:

- a. Berry, Steven, James Levinsohn, and Ariel Pakes. "Automobile prices in market equilibrium." *Econometrica* (1995): 841-890.***
- b. Berry, Steven, James Levinsohn, and Ariel Pakes. "Differentiated products demand systems from a combination of micro and macro data: The new car market." *Journal of Political Economy* 112.1 (2004): 68-105.***
- c. Akerberg, Daniel, et al. "Econometric tools for analyzing market outcomes." *Handbook of Econometrics* 6 (2007): 4171-4276.***
- d. Gordon, Brett R., and Wesley R. Hartmann. "Advertising effects in presidential elections." *Marketing Science* 32.1 (2013): 19-35.***
- e. Montero, Sergio. "Going at It Alone? An Empirical Study of Coalition Formation in Elections." Typeset 2016.***

- f. Degan, Arianna, and Antonio Merlo. “Do voters vote ideologically?.” *Journal of Economic Theory* 144.5 (2009): 1868-1894.***
- g. Coate, Stephen, Michael Conlin, and Andrea Moro. “The Performance of Pivotal Voter Models in small-scale Elections: Evidence from Texas Liquor Referenda.” *Journal of Public Economics* 92.3 (2008): 582-596.***
- h. Kawai, Kei. “Campaign finance in us house elections.” (2014).***
- i. Knight, Brian, and Nathan Schiff. “Momentum and social learning in presidential primaries.” *Journal of Political Economy* 118.6 (2010): 1110-1150.***

D. Media

- S10. Martin, Gregory J., and Ali Yurukoglu. “Bias in cable news: Persuasion and polarization.” *The American Economic Review* 107.9 (2017): 2565-2599.
- S11. Chiang, Chun-Fang, and Brian Knight. “Media bias and influence: Evidence from newspaper endorsements.” *The Review of Economic Studies* 78.3 (2011): 795-820.

Related:

- a. Snyder Jr, James M., and David Stromberg. “Press Coverage and Political Accountability.” *Journal of Political Economy* 118.2 (2010): 355-408.
- b. Stromberg, David. “Mass media competition, political competition, and public policy.” *The Review of Economic Studies* 71.1 (2004): 265-284.”***
- c. Snyder Jr, James M., and David Stromberg. “Press coverage and political accountability.” *Journal of Political Economy* 118.2 (2010): 355-408.***
- d. DellaVigna, Stefano, and Ethan Kaplan. “The Fox News effect: Media bias and voting.” *The Quarterly Journal of Economics* 122.3 (2007): 1187-1234.***
- e. Gentzkow, M. and Shapiro, J. M. (2010), What Drives Media Slant? Evidence From U.S. Daily Newspapers. *Econometrica*, 78: 35-71.***

E. Bargaining and Coalition Formation

- S12. Trebbi, Francesco, and Eric Weese. “Insurgency and small wars: Estimation of unobserved coalition structures.” Working Paper, 2015.
- S13. Diermeier, D., Keane, M., and Merlo, A. (2005). “A Political Economy Model of Congressional Careers.” *American Economic Review*, 95(1):347–373
- S14. Diermeier, Daniel, Hulya Eraslan, and Antonio Merlo. “A structural model of government formation.” *Econometrica* 71, no. 1 (2003): 27-70.***
- S15. Francois, Patrick, Ilia Rainer, and Francesco Trebbi. “How is power shared in Africa?.” *Econometrica* 83.2 (2015): 465-503.***

Related:

- S16. Sieg, Holger. “Estimating a bargaining model with asymmetric information: evidence from medical malpractice disputes.” *Journal of Political Economy* 108.5 (2000): 1006-1021.***

- S17. Knight, Brian. "Estimating the value of proposal power." *American Economic Review* 95.5 (2005): 1639-1652.***
- S18. Weese, Eric. "Political mergers as coalition formation: an analysis of the Heisei municipal amalgamations." *Quantitative Economics* 6.2 (2015): 257-307.***

F. Political Economy and Development

- S19. Acemoglu, D., Garcia-Jimeno, C., and Robinson, J. A. (2015). State Capacity and Economic Development: A Network Approach. *American Economic Review*, 105(8):2364–2409

Related:

- a. Olken, Benjamin A., and Patrick Barron. "The simple economics of extortion: evidence from trucking in Aceh." *Journal of Political Economy* 117, no. 3 (2009): 417-452.***
- b. Garcia-Jimeno, C. (2016), *The Political Economy of Moral Conict: An Empirical Study of Learning and Law Enforcement Under Prohibition*. *Econometrica*, 84: 511-570.***
- c. Goldberg, Pinelopi Koujianou, and Giovanni Maggi. "Protection for sale: An empirical investigation." *American Economic Review* 89.5 (1999): 1135-1155.***

Additional readings:

Note: these readings cover only methods material that may be useful or necessary for structural model estimation.

G. General textbooks

- A1. Judd, K. L., & Judd, K. L. (1998). *Numerical methods in economics*. MIT press.
- A2. Adda, J., Cooper, R., & Cooper, R. W. (2003). *Dynamic economics: quantitative methods and applications*. MIT press.
- A3. Miranda, M. J., & Fackler, P. L. (2004). *Applied computational economics and finance*. MIT press.

G. Aggregate Discrete-Choice Models

- A4. Berry, S. T. (1994). Estimating Discrete-Choice Models of Product Differentiation. *RAND Journal of Economics*, 25(2):242–262
- A5. Berry, S., Levinsohn, J., and Pakes, A. (1995). Automobile Prices in Market Equilibrium. *Econometrica*, 63(4):841–890
- A6. Nevo, A. (2000). A Practitioner's Guide to Estimation of Random-Coefficients Logit Models of Demand. *Journal of Economics & Management Strategy*, 9(4):513–548
- A7. Dubé, J.-P., Fox, J. T., and Su, C.-L. (2012). Improving the Numerical Performance of Static and Dynamic Aggregate Discrete Choice Random Coefficients Demand Estimation. *Econometrica*, 80(5):2231–2267
- A8. Judd, K. L. and Skrainka, B. S. (2011). High Performance Quadrature Rules: How Numerical Integration Affects a Popular Model of Product Differentiation. CEMMAP Working Paper CWP03/11

- A9. Reynaert, M. and Verboven, F. (2014). Improving the performance of random coefficients demand models: The role of optimal instruments. *Journal of Econometrics*, 179:83–98
- A10. Gandhi, A. and Houde, J.-F. (2016). Measuring Substitution Patterns in Differentiated Products Industries. Working Paper

H. Discrete Games, Partial Identification

- A11. Ciliberto, F. and Tamer, E. (2009). Market Structure and Multiple Equilibria in Airline Markets. *Econometrica*, 77(6):1791–1828
- A12. Chernozhukov, V., Hong, H., and Tamer, E. (2007). Estimation and Confidence Regions for Parameter Sets in Econometric Models. *Econometrica*, 75(5):1243–1284
- A13. Bajari, P., Hong, H., and Ryan, S. P. (2010). Identification and Estimation of a Discrete Game of Complete Information. *Econometrica*, 78(5):1529–1568
- A14. Romano, J. P. and Shaikh, A. M. (2010). Inference for the Identified Set in Partially Identified Econometric Models. *Econometrica*, 78(1):169–211
- A15. Andrews, D. W. K. and Shi, X. (2013). “Inference Based on Conditional Moment Inequalities”. *Econometrica*, 81(2):609–666
- A16. Pakes, A., Porter, J., Ho, K., and Ishii, J. (2015). Moment Inequalities and Their Application. *Econometrica*, 83(1):315–334
- A17. Shi, X. and Shum, M. (2015). Simple two-stage inference for a class of partially identified models. *Econometric Theory*, 31(3):493–520
- A18. Jia, P. (2008). What Happens When Wal-Mart Comes to Town: An Empirical Analysis of the Discount Retailing Industry. *Econometrica*, 76(6):1263–1316
- A19. Canay, I. A. and Shaikh, A. (2017). Practical and theoretical advances for inference in partially identified models. In B. Honoré, A. Pakes, M. P. and Samuelson, L., editors, *Advances in Economics and Econometrics*, volume 2 of *Econometric Society Monographs*, pages 271–306. Cambridge University Press
- A20. Economics and Econometrics, volume 2 of *Econometric Society Monographs*, pages 271–306. Cambridge University Press
- A21. Andrews, D. W. K. and Soares, G. (2010). Inference for parameters defined by moment inequalities using generalized moment selection. *Econometrica*, 78(1):119–157
- A22. Romano, J. P., Shaikh, A., and Wolf, M. (2014). A practical two-step method for testing moment inequalities. *Econometrica*, 82(5):1979–2002
- A23. McKelvey, R. and Palfrey, T. (1995). Quantal response equilibria for normal-form games. *Games and Economic Behavior*, 10(1):6–38

J. Dynamic Programming

- A24. Rust, J. (1987). Optimal replacement of gmc bus engines - an empirical model of Harold zurcher. *Econometrica*, 55(5):999–1033
- A25. Rust, J. (1988). Maximum-likelihood estimation of discrete control processes. *SIAM Journal on Control and Optimization*, 26(5):1006–1024

- A26. Aguirregabiria, V. (2010). Another Look at the Identification of Dynamic Discrete Decision Processes: An Application to Retirement Behavior. *Journal of Business & Economic Statistics*, 28(2):201–218
- A27. Aguirregabiria, V. and Mira, P. (2002). Swapping the nested fixed point algorithm: A class of estimators for discrete Markov decision models. *Econometrica*, 70(4):1519–1543
- A28. Aguirregabiria, V. and Mira, P. (2010). Dynamic discrete choice structural models: A survey. *Journal of Econometrics*, 156(1):38–67
- A29. Arcidiacono, P. and Miller, R. (2011). Conditional choice probability estimation of dynamic discrete choice models with unobserved heterogeneity. *Econometrica*, 79(6):1823–1867
- A30. Hotz, V. and Miller, R. (1993). Conditional choice probabilities and the estimation of dynamic models. *Review of Economic Studies*, 60(3):497–529
- A31. Hotz, V., Miller, R., Sanders, S., and Smith, J. (1994). A simulation estimator for dynamic models of discrete choice. *Review of Economic Studies*, 61(2):265–289
- A32. Hu, Y. and Shum, M. (2012). Nonparametric Identification of Dynamic Models with Unobserved State Variables. *Journal of Econometrics*, 171:32–44
- A33. Imai, S., Jain, N., and Ching, A. (2009). Bayesian Estimation of Dynamic Discrete Choice Models. *Econometrica*, 77(6):1865–1899
- A34. Kasahara, H. and Shimotsu, K. (2008). Pseudo-likelihood estimation and bootstrap inference for structural discrete Markov decision models. *Journal of Econometrics*, 146(1):92–106
- A35. Kasahara, H. and Shimotsu, K. (2009). Nonparametric Identification of Finite Mixture Models of Dynamic Discrete Choices. *Econometrica*, 77(1):135–175
- A36. Magnac, T. and Thesmar, D. (2002). Identifying dynamic discrete decision processes. *Econometrica*, 70(2):801–816
- A37. Norets, A. (2009). Inference in Dynamic Discrete Choice Models with Serially Correlated Unobserved State Variables. *Econometrica*, 77(5):1665–1682
- A38. Santos, M. S. (2010). Consistency properties of a simulation-based estimator for dynamic processes. *Annals of Applied Probability*, 20(1):196–213
- A39. Santos, M. and Rust, J. (2004). Convergence properties of policy iteration. *SIAM Journal on Control and Optimization*, 42(6):2094–2115
- A40. Taber, C. (2000). Semiparametric identification and heterogeneity in discrete choice dynamic programming models. *Journal of Econometrics*, 96(2):201–229.

K. Dynamic Games

- A41. Aguirregabiria, V. and Mira, P. (2007). Sequential estimation of dynamic discrete games. *Econometrica*, 75(1):1–53
- A42. Pesendorfer, M. and Schmidt-Dengler, P. (2008). Asymptotic least squares estimators for dynamic games. *Review of Economic Studies*, 75(3):901–928
- A43. Bajari, P., Benkard, C. L., and Levin, J. (2007). Estimating dynamic models of imperfect competition. *Econometrica*, 75(5):1331–1370
- A44. Haile, P. A., Hortacsu, A., and Kosenok, G. (2008). On the empirical content of quantal response equilibrium. *American Economic Review*, 98(1):180–200
- A45. Hu, Y. and Shum, M. (2013). Identifying Dynamic Games with Serially-Correlated Unobservables.

- A46. In *Advances in Econometrics (Volume 31): Structural Econometric Models*. Emerald Publishing
- A47. Jovanovic, B. (1989). Observable implications of models with multiple equilibria. *Econometrica*, 57(6):1431–1437
- A48. Pakes, A., Ostrovsky, M., and Berry, S. (2007). Simple estimators for the parameters of discrete dynamic games (with entry/exit examples). *RAND Journal of Economics*, 38(2):373–399
- A49. Pesendorfer, M. and Schmidt-Dengler, P. (2010). Sequential Estimation of Dynamic Discrete Games: A Comment. *Econometrica*, 78(2):833–842
- A50. Reiss, P. (1996). Empirical models of discrete strategic choices. *American Economic Review*, 86(2):421–426
- A51. Jia Barwick, P. and Pathak, P. (2015). The costs of free entry: an empirical study of real estate agents in Greater Boston. *RAND Journal of Economics*, 46(1):103–145