Reading List – ZICE 2015

January 6, 2015

Numerical Methods: General

1. Judd, K.L. (1998): *Numerical Methods in Economics.* Cambridge, MA: MIT Press.

   This textbook provides a broad introduction to numerical methods in economics. It should be part of your library.

Optimization

2. Nocedal, J., and S.J. Wright (2006): *Numerical Optimization.* New York: Springer.

   This textbook provides a comprehensive treatment of numerical optimization methods. It should be part of your library.

3. Conn, A.R., Scheinberg, K., and L.N. Vicente (2009): *Introduction to Derivative-Free Optimization.* SIAM: `http://dx.doi.org/10.1137/1.9780898718768`.

   This book provides a mathematical introduction to methods for optimization when derivatives of the objective function are not available.

4. Schmedders, K. (2008): "Numerical Optimization Methods in Economics," in *The New Palgrave: A Dictionary of Economics.*

   This Palgrave dictionary entry provides a brief and simplified introduction to numerical optimization methods in economics. It is a good starting point to obtain a first impression of numerical optimization.

Dynamic Programming

5. Cai, Y., and K.L. Judd (2012): "Stable and efficient Computational Methods for Dynamic Programming," working paper.

6. Cai, Y., and K.L. Judd (2012): "Dynamic programming with shape-preserving rational spline Hermite interpolation," *Economics Letters*, 117, 161-164.

7. Cai, Y., and K.L. Judd (2012): "Shape-preserving dynamic programming," forthcoming in *Mathematical Methods of Operations Research.*

8. Cai, Y., and K.L. Judd (2012): "Dynamic Programming with Hermite Approximation," working paper.

9. Cai, Y., Judd, K.L., and T.S. Lontzek (2012): "The Social Cost of Stochastic and Irreversible Climate Change," working paper.

10. Cai, Y., Judd, K.L., G. Thain and A.J. Wright (2012): "Solving Dynamic Programming Problems on a Computational Grid," working paper.

11. Cai, Y., Judd, K.L. and R. Xu (2012): "Numerical Solution of Dynamic Portfolio Optimization with Transaction Costs," working paper.

12. Rust, J. P. (1996): "Numerical Dynamic Programming in Economics," in : *Handbook of Computational Economics* Vol. 1, Amman, H.M., Kendrick, D.A. and Rust, J. (Eds.), Elsevier, 619–729.

Constrained Optimization and Estimation

13. Dubé, J.-P., Fox, J. T., and C.-L. SU (2012): "Improving the Numerical Performance of Static and Dynamic Aggregate Discrete Choice Random Coefficients Demand Estimation," *Econometrica*, 80 (5), 2231–2267.

14. Dubé, J.-P., Fox, J. T., and C.-L. SU (2012): "Supplement to Improving the Numerical Performance of Static and Dynamic Aggregate Discrete Choice Random Coefficients Demand Estimation," *Econometrica Supplementary Material*.

15. Egesdal, M., Lai, Z., and C.-L. SU (2014): "Estimating Dynamic Discrete-Choice Games of Incomplete Information," forthcoming in *Quantitative Economics*.

    The first two authors of this paper are graduates of ICE 2012.

16. Su, C.-L. (2012): "Estimating Discrete-Choice Games of Incomplete Information: A Simple Static Example," working paper, *The University of Chicago, Booth School of Business*.

17. Su C.-L., and K.J. Judd,(2012): "Constrained Optimization Approaches to Estimation of Structural Models," *Econometrica*, 80 (5), 2213–2230.

    This paper is the perhaps most influential computational work in economics during the last two decades. Do we need to say more?

Repeated and Dynamic Games

18. Abreu D., Pearce D.G., and E. Stacchetti (1986): "Optimal Cartel Equilibria with Imperfect Monitoring," *Journal of Economic Theory*, 39 (1), 251–269.

19. Abreu D., Pearce D.G., and E. Stacchetti (1990): "Toward a Theory of Discounted Repeated Games with Imperfect Monitoring," *Econometrica*, 58 (5), 1041–1063.

20. Judd K., Yeltekin S., and J. Conklin (2003): "Computing Supergame Equilibria," *Econometrica*, 71 (4), 1239–1254.

Heterogeneous Agent Models

21. Judd, K.J., Maliar, L., and S. Maliar (2011): "Numerically stable and accurate stochastic simulation approaches for solving dynamic economic models," *Quantitative Economics*, 2, 173-210.

22. Judd, K.J., Maliar, L., and S. Maliar (2011): "Supplement to Numerically stable and accurate stochastic simulation approaches for solving dynamic economic models: Appendices," *Quantitative Economics*, 2 (2), 173-210.

23. Judd, K.J., Maliar, L., and S. Maliar (2012): "Merging Simulation and Projection Approaches to Solve High-Dimensional Problems," working paper.

24. Mertens, T.M., and K.J. Judd (2012): Supplement to Equilibrium Existence and Approximation for Incomplete Market Models with Substantial Heterogeneity," working paper.

Income Taxation

25. Judd, K.J. and C.L. Su (2006): "Optimal Income Taxation with Multidimensional Taxpayer Types," working paper.

Sparse Grids

26. Brumm, J., and S. Scheidegger (2014): "Using Adaptive Sparse Grids to Solve High-Dimensional Dynamic Models," working paper, `http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2349281`.

27. Bungartz, H.-J., and M. Griebel (2004): "Sparse Grids," *Acta Numerica*, 13, 1–123.

Auctions

28. Hubbard, T.P. and H.J. Paarsch (2014): "On the Numerical Solution of Equilibria in Auction Models with Asymmetries within the Private-Values Paradigm." Chapter 2 in the *Handbook of Computational Economics*, Volume 3, edited by Kenneth L. Judd and Karl Schmedders. New York: Elsevier, pages 35–111.

Endogenous Grid Methods

29. Carroll, C.D. (2006): "The Method of Endogenous Gridpoints for Solving Dynamic Stochastic Optimization Problems," *Economics Letters*, 91 (3), 312–320.

30. Fella, G. (2014): "A Generalized Endogenous Grid Method for Non-smooth and Non-concave Problems," *Review of Economic Dynamics*, 17 (2), 329–344.

31. Iskhakov, F., Jørgensen, T., Rust J., and B. Schjerning (2014): "Estimating Discrete-Continuous Choice Models: Endogenous Grid Method with Taste Shocks," unpublished manuscript.

Nested Fixed Point Method

32. Rust, J. (1987): "Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher," *Econometrica*, 55 (5), 999–1033.

33. Rust, J. (2000): "Nested Fixed Point Algorithm Documentation Manual," unpublished manuscript, version 6.

34. Kristensen, D. and B. Schjerning (2012): "Implementation and Estimation of Discrete Markov Decision Models by Sieve Approximation," unpublished manuscript.

Cars

35. Rust, J. (1985): "Stationary Equilibrium in a Market for Durable Assets," *Econometrica*, 53 (4), 783–805.

36. Gillingham, K. (2012): "Selection on Anticipated Driving and the Consumer Response to Changing Gasoline Prices," unpublished manuscript.

37. Munk-Nielsen, A. (2012): "Diesel Cars and Environmental Policy," work in progress, UCL.

38. Gillingham, K., Munk-Nielsen, A., Iskhakov, F., Rust, J., and B. Schjerning (2012): "A Dynamic Model of Car Ownership, Type Choice and Usage," unpublished manuscript.

39. Cho, S., Paarsch, H., and J. Rust (2014): "An Empirical Analysis of Informationally Restricted Dynamic Auctions of Used Cars," unpublished manuscript.

This And That

40. Iskhakov, F., Rust, J., and Bertel Schjerning (2013): "Recursive Lexicographical Search: Finding all Markov Perfect Equilibria of Finite State Directional Dynamic Games," unpublished manuscript.

41. Iskhakov, F., Rust, J., and Bertel Schjerning (2013): "The Dynamics of Bertrand Price Competition with Cost-reducing Investments," UCPH Working Paper, No. 13–05.