

University of Kentucky - Department of Economics
Economics 707 – Spring 2017
Research Seminar in Economics

Course Information:

Professor: Dr. Carlos Lamarche
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 Lectures: TR 9:30 am - 10:45 am, 399 B&E Building
 Office Hours: TR, 4-6 PM, and upon request, 223G B&E Building
 Course Web Site: <http://gaton.uky.edu/Faculty/lamarche/ec707/ec707.html>

Course Description:

This course will help students develop research skills in microeconometrics by the discussion of topics on the frontier of applied economic research and requiring them to work through an independent project from start to finish. The student will review the literature and select a topic in an area of economics of interest. The student will then complete the project under the guidance of the instructor. Students will discuss their ongoing work in class with other students and in individual meetings with the instructor.

Prerequisites:

Passing the Theory Exams or permission of the instructor.

Tentative Course Schedule:

The following schedule should be considered preliminary. I will cover all the material but I reserve the right to introduce changes and/or improvements. I will provide lecture notes but reading the material I listed below is encouraged.

Week	Date	Topic	Reference
1	Jan 12	GMM and Method of Simulated Moments	CT 6, List 1
2	Jan 19	Large Sample Results, Delta Method and Bootstrap	CT 11 & 12, List 2
3	Jan 26	Nonparametric and Semiparametric Estimation	List 3
4	Feb 2	Advanced Panel Data Models I	H, B
5	Feb 9	Advanced Panel Data Models II	List 4
6	Feb 16	Nonlinear Panel Data	List 5
7	Feb 23	Introduction to Quantile Regression	CT, K 1-2, List 6
8	March 2	Quantile Regression with Endogenous Variables	List 7
9	March 9	Quantile Methods for Censored Data	List 8
10	March 23	Panel Data Quantile Regression	List 9
11	March 30	Quantile Treatment Effects and Distributional Effects	List 10
12	April 6	Student Presentations	
13	April 13	Introduction to Big Data, Basic Definitions & Challenges	Lecture notes
14	April 20	High-dimensional and Sparse Models	BG, HT and List 11
15	April 27	L_1 and L_2 regularization and estimation of Causal Effects	HT, List 11
16	May 4	Final Exam Week	

Textbooks:

There is no required textbook, but there are several books that are useful:

1.1 Microeconometrics: Methods and Applications, Cameron and Trivedi (2005), Cambridge (CT).

2. Specialized and general books:

2.1 Analysis of Panel Data, Cheng Hsiao (2003), Cambridge University Press (H).

2.2 Econometric Analysis of Panel Data, Badi Baltagi (2005), John Wiley & Sons (B).

2.3 Econometric Analysis of Cross Section and Panel Data, Jeffrey Wooldridge (2002), MIT Press (WO).

2.4 Quantile Regression. Roger Koenker (2005), Cambridge University Press (K).

2.5 Nonparametric Econometrics, Pagan and Ullah (1999), Cambridge University Press (PU).

2.6 Statistics for High-Dimensional Data, Peter Bühlmann and Sara van der Geer (2011), Cambridge University Press (BG).

2.7 Statistical Learning with Sparsity: The Lasso and Generalizations, Trevor Hastie, Robert Tibshirani and Martin Wainwright (2015), Chapman and Hall/CRC (HT).

Reading Lists:

Reading List 1

1. Newey, Whitney K., and Daniel McFadden (1994). "Large Sample Estimation and Hypothesis Testing", Handbook of Econometrics, Vol. 4, Elsevier, North-Holland, chapter 36.
2. Asymptotic Statistics, A. W. van der Vaart (1998), Cambridge University Press.

Reading List 2

3. Efron, B. (1982). "The jackknife, the bootstrap, and other resampling plans". Society of Industrial and Applied Mathematics CBMS-NSF Monographs, 38.
4. Efron, B., and R. Tibshirani (1993), "An introduction to the bootstrap", NY: Chapman & Hall.
5. Jin, Z., Z. Ying and L. J. Wei (2001), "A simple resampling method by perturbing the minimand", Biometrika, 88, 381-390.
6. Feng, X., X. He and J. Hu (2011), "Wild bootstrap for quantile regression", Biometrika, 98, 995-999.
7. Horowitz, J. L, (2001), "The Bootstrap", Handbook of Econometrics, Vol. 5, Elsevier, North-Holland, chapter 52.

Reading List 3

8. Härdle and Linton (1999), "Applied Nonparametric Methods", Handbook of Econometrics
9. *Das, M., W. K. Newey, and F. Vella (2003), "Nonparametric Estimation of Sample Selection Models", Review of Economic Studies, 70, 33-58.
10. Härdle, W. (1991), Smoothing Techniques with Implementation in S. Springer-Verlag, New York.

Reading List 4

11. *Pesaran, H. M. (2006), "Estimation and Inference in Large Heterogeneous Panels with a Multifactor Error Structure", Econometrica, 74, 967-1012
12. *Bai, J. (2009), "Panel Data Models with Interactive Fixed Effects", Econometrica, 77, 1229-1279
13. *Wooldridge, J. (1995), "Selection corrections for panel data models under conditional mean independence assumptions", Journal of Econometrics, 68, pp. 115-132
14. Kyriazidou, E. (2001), "Estimation of dynamic panel data sample selection models", Review of Economic Studies, 68, pp. 543-572.
15. Altonji, J. G. and R. L. Matzkin (2005), "Cross section and panel data estimators for nonseparable models with endogenous regressors", Econometrica, 73, pp. 1053-1102

16. *Hausman, J. and W. Taylor (1981), "Panel Data and Unobservable Individual Effects," *Econometrica*, 49, 1377-1398
17. *Bertrand, M., E. Duflo and S. Mullainathan (2004). "How Much Should We Trust Differences-in-Differences Estimates?," *The Quarterly Journal of Economics*, 119, pp 249-275.

Reading List 5

18. Arellano, M. and B. Honoré (2001), "Panel Data Models: Some Recent Developments." In *Handbook of Econometrics*. Vol. 5.
19. *Hahn, J., and W. Newey (2003). "Jackknife and Analytical Bias Reduction for Nonlinear Panel Data Models." *Econometrica*, 72, 1295-1319.
20. Kato, K., A. F. Galvao Jr., G. V. Montes-Rojas (2012), "Asymptotics for panel quantile regression models with individual effects", *Journal of Econometrics*.

Reading List 6

21. *Koenker, R., and K. F. Hallock (2001) "Quantile Regression", *Journal of Economic Perspectives* 15, 143-156.
22. Buchinsky, M. (1994), "Changes in the U.S. Wage Structure 1963-1987: Application of Quantile Regression", *Econometrica*, 62, 405-458.

Reading List 7

23. Ma, L. and R. Koenker (2006), "Quantile Regression for Recursive Structural Models", *Journal of Econometrics*, 134, 471-506
24. *Chernozhukov, V. and C. Hansen (2006), "Instrumental Quantile Regression Inference for Structural and Treatment Effect Models," *Journal of Econometrics*, 132, 491-525
25. Chernozhukov, V. and C. Hansen (2005), "An IV Model of Quantile Treatment Effects," *Econometrica*, 73, 245-261
26. *Lee, S. (2007), "Endogeneity in quantile regression models: A control function approach", *Journal of Econometrics*, 141, pp. 1131-1158.

Reading List 8

27. *Powell, J. (1984), "Least Absolute Deviations Estimation for the Censored Regression Model", *Journal of Econometrics*, 25, pp. 303-325.
28. Chernozhukov V. and H. Hong (2002), "Three-Step Censored Quantile Regression and Extramarital Affairs," *Journal of the American Statistical Association*, 97, pp. 872-882.
29. *Blundell, R. and J. Powell (2007), "Censored regression quantiles with endogenous regressors," *Journal of Econometrics*, 141, pp. 65-83.

Reading List 9

30. *Koenker, R. (2004), "Quantile Regression for Longitudinal Data", *Journal of Multivariate Analysis*, 91, pp 74-89.
31. Chernozhukov, V., I. Fernandez-Val and W. Newey (2009), Quantile and Average Effects in Nonseparable Panel Models, *Cemmap Working Papers*, CWP29/09
32. Lamarche, C. (2010), "Robust Penalized Quantile Regression Estimation for Panel Data", *Journal of Econometrics*, 157, 396-408
33. Abrevaya, J. and C. Dahl (2008), "The Effects of Smoking and Prenatal Care on Birth Outcomes: Evidence from Quantile Regression Estimation on Panel Data", *Journal of Business and Economic Statistics*, 26, 379-397.
34. Harding, M. and C. Lamarche (2009), "A Quantile Regression Approach for Estimating Panel Data Models Using Instrumental Variables", *Economics Letters*, 104, 133-135
35. Harding, M. and C. Lamarche (2014), "Estimating and Testing a Quantile Regression Model with Interactive Effects", *Journal of Econometrics*

36. Galvao, A. (2011), "Quantile Regression for Dynamic Panel Data with Fixed Effects", *Journal of Econometrics*.
37. *Peng, L. and Y. Huang (2008), "Survival Analysis With Quantile Regression Models", *Journal of the American Statistical Association*, 103, 637-649.
38. Wang, H. J. and M. Fyngenson (2009), "Inference for Censored Quantile Regression in Longitudinal Studies", *Annals of Statistics*, 37, 756-781.
39. *Portnoy, S. L. (2003), "Censored Regression Quantiles", *Journal of American Statistical Association*, 98, 1001-1012.
40. Harding and Lamarche (2012), "Quantile Regression Estimation of Panel Duration Models with Censored Data", *Advances in Econometrics* 29.

Reading List 10

41. Firpo, S. (2007), "Efficient Semiparametric Estimation of Quantile Treatment Effects," *Econometrica*, 75, 259-276
42. Bitler, M.P., J.B. Gelbach, and H.W. Hoynes (2008), "Distributional Impacts of the Self-Sufficiency Project," *Journal of Public Economics*, 92, 748-765
43. *Bitler, M. P., J. B. Gelbach and H. W. Hoynes (2006), "What Mean Impacts Miss: Distributional Effects Of Welfare Reform Experiments," *American Economic Review*, 96, 988-1012
44. *Athey, S. and G.W. Imbens (2006), "Identification and Inference in Nonlinear Difference-In-Differences Models," *Econometrica*, 74, 431-497
45. Abadie, A. (2002), "Bootstrap Tests for Distributional Treatment Effects in Instrumental Variable Models," *Journal of the American Statistical Association*, 97, 284-292

Reading List 11

46. Belloni, A., V. Chernozhukov and C. Hansen (2014), "High-Dimensional Methods and Inference in Structural and Treatment Effects" *Journal of Economic Perspectives*, 28, 29-50.
47. Belloni, A., V. Chernozhukov and C. Hansen (2014), "Inference on Treatment Effects after Selection among High-Dimensional Controls", *Review of Economic Studies*, 81, 608-650.
48. Belloni, A., and V. Chernozhukov (2011), "L1-penalized quantile regression in high-dimensional sparse models," *The Annals of Statistics*, 39(1), 82-130.
49. Belloni, A., V. Chernozhukov, and K. Kato (2014), "Valid post-selection inference in high-dimensional approximately sparse quantile regression models," manuscript.
50. Chudik, A., G. Kapetanios and M. Hashem Pesaran (2016), "Big Data Analytics: A New Perspective", mimeo, USC
51. Harding, M., and C. Lamarche (2016), "Sparsity-Based Estimation of a Panel Quantile Count Data Model with Applications to Big Data", mimeo, Duke University
52. Harding, M., and C. Lamarche (2016), "A Panel Quantile Approach to Attrition Bias in Big Data: Evidence from a Randomized Experiment", mimeo, Duke University
53. Taddy, M. (2013): "Multinomial Inverse Regression for Text Analysis," *Journal of the American Statistical Association*, 108(503), 755-770.
54. Taddy, M. (2014): "Distributed Multinomial Regression," ArXiv e-prints.
55. Athey, S. and G. Imbens (2015), "Recursive Partitioning for Heterogeneous Causal Effects", ArXiv e-prints.

Attendance Policies and Excused Absences:

It is students' responsibility to attend class. Students however need to notify the professor of absences prior to class when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Verification of Absences:

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request “appropriate verification” when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Academic Integrity:

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website:

<http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of *Student Rights and Responsibilities* (available online <http://www.uky.edu/StudentAffairs/Code/part2.html>) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else’s work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student’s assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).

Accommodations due to disability:

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, email address: jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.

Course Grade:

The grade distribution is 90-100% = A, 82 – 89% = B, etc. However, I reserve the right to curve the grades as I see fit.

The grades will be based on: Presentation in class (15%), Project (55%), and Final (30%).