计量经济学
Econometrics

Fall 2021
马骏
中国人民大学 经济学院

- Instructor: 马骏

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- Office: 北校区一号楼西配楼106

- Time: Wednesday 19:40-21:10; Friday 10:00-11:30

- Classroom: 教二2209

- Lecture slides, homework and answers will be posted on the course Website: https://ruc-econ.github.io/UG_econometrics/

Course Description

- This is a standard undergraduate econometrics course, covering simple and multiple linear regression, hypothesis testing, instrumental variable and simultaneous equations models, limited dependent variables models, panel data models.

- Brief introduction to modern big data techniques including regression with high dimensional data, resampling methods and also synthetic control methods.

- This course focuses on understanding of basic concepts, mathematical details and proofs (to some extent) and applications in economics.

Textbook

- Wooldridge J.M. (2009): Introductory Econometrics: A Modern Approach, 4th edition

- Amemiya, T. (1994): Introduction to Statistics and Econometrics

- Wasserman, L. (2004): All of Statistics: A Concise Course in Statistical Inference

- 赵国庆 (2016): 计量经济学 (第五版), 中国人民大学出版社

- Other useful references will be mentioned in class.

- All homework questions (e.g. Chapter 4, Exercise 11) refer to corresponding questions from Wooldridge 4th edition.

Prerequisite

- Students are expected to know basic knowledge about calculus, probability and statistics.

- There will be review classes for probability and statistics.

- Occasionally, linear algebra notations (vectors and matrices) will be used in class. Knowledge about linear algebra is helpful. Homework and exam questions involve no linear algebra.

Software

- Tutorials on using the econometric/statistical software STATA will be held by the teaching assistants in late November.

- Stata learning resources can be found online, see e.g. http://data.princeton.edu/stata/.

- No homework/exam question will involve STATA applications.

Grading

- 20%*homework (one homework every two weeks approximately) + 40%*midterm exam + 40%*final exam

- Homework should be handed in before class.

- Late homework will not be accepted.

Syllabus

1. Introduction (Wooldridge Ch. 1)

2. Review of Probability (Wooldridge Appendix B)

3. Simple Linear Regression (Wooldridge Ch. 2)

4. Multiple Linear Regression (Wooldridge Ch. 3,4)

5. OLS Asymptotics (Wooldridge Ch. 5)

6. Qualitative Information and Functional Form (Wooldridge Ch. 6,7)

7. Heteroskedasticity (Wooldridge Ch. 8)

8. Regression in High Dimensions: Model Selection and LASSO

9. Instrumental Variable Estimation (Wooldridge Ch. 15)

10. Simultaneous Equations (Wooldridge Ch. 16)

11. Maximum Likelihood (Amemiya Ch. 7,8,9, Wooldridge Appendix C)

12. Applications of Maximum Likelihood to Econometrics (Amemiya Ch. 13, Wooldridge Ch. 17)

13. Jackknife and Bootstrap (Wasserman Ch. 8)

14. Panel Data Models (Wooldridge Ch. 13, 14)

15. Synthetic Control Methods