Seungho Baek, PhD  
Office Hours: Saturday 8:30 A.M. to 9:00 A.M.; 12:00 P.M. to 1:30 P.M  
Maguire Office # 460  
1 East Pearson, Chicago, IL 60611  
Office Hours, including By Appointment

<table>
<thead>
<tr>
<th>Course Number, Section, Title, and Semester/Quarter &amp; Academic Year</th>
<th>Meeting Days/Times and Location</th>
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<tbody>
<tr>
<td>Catalog Description</td>
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<td>- FIN-625 Applied Econometrics</td>
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| - Class Time: Saturdays 9:00 A.M. to 12:00 P.M  
  Corboy Law Center – Room 304  
  Lab Session: Corboy Law Center – Room 201 (Only when specified) |  |

Course Overview

This course explores econometrics theories and their implementations. Going beyond fundamental theories, the course studies how econometric models can be applied to analyze financial data using these tools.

Basically, these econometric models encompass single and multiple regression models with cross section data and time series data and several estimation methods such OLS, WLS (GLS), MLE, and etc. Students should learn these basic models as well as how to diagnose estimated models (Goodness-of-Fit). By seeing where these estimations succeed and where they fail, students should gain analytical insights into financial markets.

Theories in modern finance are normally based on econometric theories presented as linear regression models. Popular theories using linear factor models (CAPM, Fama-French model, Arbitrage Pricing Theory) are discussed with emphasis on comparing the underlying economic assumptions and derived implications. These theories connect asset pricing to economic risk. Using the econometric theories, the course will examine common asset pricing paradigms such as beta representations and mean-variance portfolios (if we have available time).

1 CAPM is explained within a simple linear regression model while FF and APT can be explained under multiple regression framework.
Course Objectives and Learning Outcomes

- To gain essential econometric theories that frequently used in finance
- To implement applied econometric model employing econometric software, which is STATA

Required Materials

- Book: Using Stata for Principles of Econometrics (4th Ed.), by Lee C. Adkins, R. Carter Hill
- Lecture notes, problem sets, and other materials will be at Sakai.
- You can obtain these book in Loyola book store or Amazon

Suggested Supplementary Resources (OPTIONAL)

- Econometric Analysis(7th Ed.), by William H. Greene
- Basic Econometrics(5th Ed.), by Damodar Gujarati and Dawn Porter
- Introduction to Mathematical Analysis, by Rober Hogg, Allen Craig, and Joseph Mckean
- Introductory Statistics for Business and Economics, by Thomas H.Wonnacott and Ronald J.Wonnacott

Course Requirements and Grading Criteria

Grades will be determined as follows:

- Quiz - 10%
- Homework - 25 %
- Midterm - 25 %
- Final - 40 % (in-class exam: 25 %, _nal project: 15 %)

The lowest homework and quiz scores will be dropped, in order to deal with medical/family emergencies/job interview.
Course Grading Scale

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<th>Grade</th>
<th>Percentage</th>
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<tr>
<td>A</td>
<td>100-93.0%</td>
</tr>
<tr>
<td>A-</td>
<td>92.9-90.0</td>
</tr>
<tr>
<td>B+</td>
<td>89.9-87.0</td>
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<tr>
<td>B</td>
<td>86.9-82</td>
</tr>
<tr>
<td>B-</td>
<td>81.9-80</td>
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<tr>
<td>C+</td>
<td>79.9-77.0</td>
</tr>
<tr>
<td>C</td>
<td>76.9-73.0</td>
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<tr>
<td>C-</td>
<td>72.9-68</td>
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Quinlan School of Business Policies:

Attendance

Class attendance and participation are fundamental components of learning, so punctual attendance at all classes, for the full class meeting period, is expected of Quinlan students. Faculty may set participation policies unique to their courses and use class participation as a component of the final grade. The student is responsible for any assignments or requirements missed during an absence.

Make-Up Examinations

Loyola University academic policy provides that tests or examinations may be given during the semester or summer sessions as often as deemed advisable by the instructor. Because Quinlan faculty believe examinations represent a critical component of student learning, required examinations should be taken during the regularly scheduled class period. Make-up examinations are discouraged. Exceptions may be granted only by the faculty member or department chair, and only for unavoidable circumstances (illness verified by a signed physician’s note, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, or religious observance). A make-up final examination may be scheduled only with the permission of the appropriate Quinlan Assistant or Associate Dean.

If a make-up examination must be given, it is the responsibility of the faculty member to prepare, schedule, and proctor the exam. Limited assistance in proctoring make-up exams may be available through a designated Quinlan administrative assistant. For a student with a documented special testing need, please consult University policy concerning use of the testing center in Sullivan Center at Lake Shore Campus.
**Academic Integrity**

All members of the Quinlan School shall refrain from academic dishonesty and misconduct in all forms, including plagiarism, cheating, misrepresentation, fabrication, and falsehood...Plagiarism or cheating on the part of the student in individual or group academic work or in examination behavior will result minimally in the instructor assigning the grade of “F” for the assignment or examination. In addition, all instances of academic dishonesty must be reported to the chairperson of the department involved.


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**Class by Class/Week by Week Course Outline**

1. Introduction to Econometrics and Review of basic Statistics and Probability Week1 (Nov. 9)

1) Review of Statistics/ Introduction to Econometrics
2) Read Ch1, 2 (Hill et al.) and Ch1, 2 (Adkins & Hill)
3) HW1 Distributed

2. Simple Regression Analysis-I Week2 (Nov, 16)

1) Quiz 1
2) Estimation (OLS)/Gauss-Markov Theorem
3) Interval Estimation and Hypothesis Testing
4) Read Ch3, 4 (Hill et al.) and Ch3, 4 (Adkins & Hill)
5) HW1 Due / HW2 Distributed

3. Simple Regression Analysis-II/Multiple Regression Analysis-I Week3 (Nov, 23)

1) Quiz 2
2) Prediction and Model Evaluation (Simple Regression)
3) Estimation, Joint Hypothesis, and Collinearity (Multiple Regression)
4) Read Ch5, 6 (Hill et al.) and Ch5, 6 (Adkins & Hill)
5) HW2 Due / HW3 Distributed

4. No Class (Thanksgiving Holiday) (Nov, 27)

5. Multiple Regression Analysis-II Week4 (Dec, 7)

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2 This schedule is subject to change.
1) Quiz 3
2) Using Indicator Variables and Heteroskedasticity
3) Heteroskedasticity and Variable Transformation
4) Read Ch7, 8 (Hill et al.) and Ch7, 8 (Adkins & Hill)
5) HW3 Due / HW4 Distributed

6. Midterm Exam Week5 (Dec, 14)
1) HW4 Due / HW5 Distributed


8. Regression with Time Series Data Week6 (Jan. 18)
1) Quiz 4
2) Stationary and Nonstationary Regression
3) Read Ch9, 12 (Hill et al.) and Ch 9, 12 (Adkins & Hill)
4) HW5 Due / HW6 Distributed

9. Moment Methods and Simultaneous Equation Models Week7 (Jan. 25)
1) Quiz 5
2) Estimation on the basis of the method of moments
3) Two-stage Least Squares Estimation
4) Read Ch10, 11 (Hill et al.) and Ch 10, 11 (Adkins & Hill)
5) HW6 Due / HW7 Distributed

10. ARCH, GARCH, and Panel Data Analysis Week8 (Feb. 1)
1) Quiz 6
2) ARCH, GARCH, Random-E_ect, Fixed-E_ect, Hausman Test
3) Read Ch14, 15 (Hill et al.) and Ch 14, 15 (Adkins & Hill)
4) HW7 Due / HW8 Distributed /Final Project Distributed

11. Vector Error Correction, Vector Autoregressive Model, Binary and Limited Data Analysis Week9 (Feb. 8)
1) Quiz 7
2) Estimating VEC and VAR, Impulse Responses and Variance Decompositions
3) Model Speci_cation and Estimation of Tobit, Probit, Logit regression model
4) Read Ch13, 16 (Hill et al.) and Ch 13, 16 (Adkins & Hill)
5) HW8 Due

12. Final Exam Week10 (Feb.15)

**Homework Assignments**

Collaboration is encouraged, but you must DO WRITE-UPS and CODING by YOURSELF and LIST NAMES of anyone who helped you (except course staff) and
LIST REFERENCES of any materials you used (except materials listed on course website). Do not copy anything from WIKIPEDIA. Please write up your own IDEAS and thoughts. Even if your thoughts are incorrect, you can still receive full credit if you apply the correct model. Penalties for noncompliance may include loss of all credit for that assignment, ZERO.

1. Deadline
Homework assignments are due before the beginning of each lecture. LATE SUBMISSIONS WILL NOT BE ACCEPTED!

2. Submission
You MUST turn in two versions of each homework: 1) submit a pdf file via Sakai and 2) 3 turn in a hard copy of your assignment in person before each lecture. To submit homeworks electronically, use Sakai. Please submit your solution in a single PDF file. ONLY a PDF FILE will be accepted. NO *.docx and *.doc files are not allowed.

Exams and Quizzes

Every week, there will be a quiz. Each quiz will cover previous class topics and Stata skills. There will be two in-class exams (midterm, finals). The test will start at 9:00 A.M and finish at 12:00 P.M.. All exams will be closed book and note. No laptop and no cheat sheet allowed. You can only bring a calculator to the test. The _nal exam will have two parts: an in-class part, and a take-home part.

NO MAKE-UP EXAMS will be allowed. Please do not ask to have the midterm and _nal rescheduled or taken at another time. You may not take the midterm and _nal later in the class period. You must take the exams promptly at the beginning of class.

Final Project

The final project will test your understanding of econometric theories and your Stata skills. The deadline for the _nal project is Feb. 15, 2014. You should submit two files: 1) a pdf version of your work and 2) a do-file (Stata code) by 11:59 P.M. via Sakai. Unlike other homework submissions, you do not need to turn in your hard copy version for this final project.

Parts of this project will ask you to download data through WRDS (Wharton Research Data Services), which is the most popular business database in the finance area. From this project, you can learn how to handle CRSP and Compustat data. This database is licensed by the Quinlan School of Business so you may freely access WRDS. If you need further assistance with WRDS, please use their customer support link.

Econometric Software

The required software for this class is Stata. For your advanced study and job search there are many econometrics tools such as Gauss, E-views, SAS, Stata, Matlab, R programming, etc. All Quinlan computers provide Stata software.
Please note: This class may occasionally deviate from the course outline above. The instructor reserves the right to make changes as needed to the course syllabus.