

Syllabus for Econ 680: Econometrics for Financial Markets (Spring, 2017)

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Office hour: Tuesdays 2:00-3:30pm at ALLN 3100.

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TA office hour: Tuesdays 3:30 - 5pm at ALLN 3040.

Lecture time/room: 12:55 - 2:10 pm on Mondays and Wednesdays at HECC 105.

Tutorial class time/room: 4-5:30pm on Fridays at ALLN 1002 (not every Friday, will be announced a few days before any tutorial classes).

Course description

This course is to provide students with basic financial econometric theory and tools so that students can use them to analyze financial data. The course covers basic time series econometrics methods and an introduction to theory of stochastic processes. We then apply these theory and methods to empirical applications with financial data. The topics we will cover include: predictability of stock returns, the event study methodology, dependent structure of financial variables (events), basic methods in risk management, portfolio theory, volatility models.

At the end of the course students are expected to understand the basic econometric theory covered in the course, and be able to use them to analyze financial data.

The assignments include theoretical problems, computer simulations, and empirical works. You can use R, SAS, Matlab, Stata, Gauss, or any other software to do the computer assignments. I will give you some R sample programs to help you on the programming part of the assignments.

Grading: Your grade will be determined by homework assignments (30%), a middle term exam (30%) on March 22 (Wednesday), and a final exam (40%) on April 26 (Wednesday).

Main reference books

1. J.H. Stock & M.W. Watson (2011). Introduction to Econometrics, 3ed. Addison-Wesley.
2. Analysis of Financial Time Series, R.S. Tsay (2010), 3rd ed. John Wiley & Sons, New York.

TAMU has free access of R.S. Tsay book via the following website:

<http://onlinelibrary.wiley.com/book/10.1002/9780470644560>

One can download chapter by chapter provided one uses a university computer and log in with net id through our library website.

The author R.S. Tsay's website is (which contains lecture notes, exercises and many data sets):

<http://faculty.chicagobooth.edu/ruey.tsay/teaching/>

Recommended reference books

1. Williams Greene, (1990,....,2014) *Econometrics Analysis*, (any edition) Prentice Hall.
2. Hamilton, J. (1994). *Time Series Analysis*. Princeton University Press, Princeton, N.J.
3. Campbell, J.Y., Lo, A.W., and MacKinlay, A.C. (1997). *Econometrics of Financial Markets*. MIT Press, Cambridge, MA.

Course outline

1. Review of liner regression models and discrete choice models.
2. Time series regression models with stationary data.
3. Introduction to stochastic processes (Brownian motion).
4. Time series regression models with non-stationary data.
5. Stock prices and asset returns.
6. Financial time series analysis and application
7. Conditional heteroskedastic models
8. Extreme values, quantiles, and value at risk
9. Multivariate time series analysis and its applications
10. Principal component analysis and factor models

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