北京大学 汇丰商学院
Peking University HSBC Business School

Financial Econometrics
3rd Module, 2017

Course Information

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Classes:
Lectures: Mon, Thu 15:30-17:20
Venue: PHBS Building, Room

1. Course Description

1.1 Context

Course overview: The objective of this course is to understand the common mistakes in empirical finance through deeper study on fundamental econometric theory.

Prerequisites: graduate econometrics

1.2 Textbooks and Reading Materials
see part 3.

2. Learning Outcomes

2.1 Intended Learning Outcomes

Learning Goals	Objectives	Assessment
1. Our graduates will be effective communicators.	1.1. Our students will produce quality business and research-oriented documents.	yes
	1.2. Students are able to professionally present their ideas and also logically explain and defend their argument.	yes
2. Our graduates will be skilled in team work and leadership.	2.1. Students will be able to lead and participate in group for projects, discussion, and presentation.	yes
	2.2. Students will be able to apply leadership theories and related skills.	na
3. Our graduates will be trained in ethics.	3.1. In a case setting, students will use appropriate techniques to analyze business problems and identify the ethical aspects,	yes

	provide a solution and defend it.	
	3.2. Our students will practice ethics in the duration of the program.	yes
4. Our graduates will have a global perspective.	4.1. Students will have an international exposure.	na
5. Our graduates will be skilled in problem-solving and critical thinking.	5.1. Our students will have a good understanding of fundamental theories in their fields.	yes
	5.2. Our students will be prepared to face problems in various business settings and find solutions.	yes
	5.3. Our students will demonstrate competency in critical thinking.	yes

2.2 Course specific objectives
Do the econometrics right

2.3 Assessment/Grading Details
Midterm (Apr 3rd, 40%), Homework (40%) and final exam (20%)

2.4 Academic Honesty and Plagiarism

It is important for a student's effort and credit to be recognized through class assessment. Credits earned for a student work due to efforts done by others are clearly unfair. Deliberate dishonesty is considered academic misconducts, which include plagiarism; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; or altering, forging, or misusing a University academic record; or fabricating or falsifying of data, research procedures, or data analysis.

All assessments are subject to academic misconduct check. Misconduct check may include reproducing the assessment, providing a copy to another member of faculty, and/or communicate a copy of this assignment to the PHBS Discipline Committee. A suspected plagiarized document/assignment submitted to a plagiarism checking service may be kept in its database for future reference purpose.

Where violation is suspected, penalties will be implemented. The penalties for academic misconduct may include: deduction of honour points, a mark of zero on the assessment, a fail grade for the whole course, and reference of the matter to the Peking University Registrar.

For more information of plagiarism, please refer to *PHBS Student Handbook*.

3. Topics, Teaching and Assessment Schedule

3.1 Introduction
Econometrics 101: Single equation models

3.2 Asymptotic tools
Law of Large Number and Consistency
Central Limit Theorem and Asymptotic normality
Heteroskedasticity Autocorrelation Consistent Estimator
Panel HSK robust standard error
Panel Clustered Standard error

3.3 Unit Roots and Breaks

Stochastic Calculus and Functional Central Limit Theorem

Reference:

Hamilton, J. (1994): *Time Series Analysis*.

Phillips, P. (1986): "Understanding Spurious Regressions in Econometrics," *Journal of Econometrics* 33: 311-340.

Phillips, P. (1987): "Time Series Regression with a Unit Root," *Econometrica* 55: 277-301.

Andrews , D. (1993): "Tests for Parameter Instability and Structural Change With Unknown Change Point," *Econometrica* 61, 821-856.

Andrews , D. (1991): "Heteroskedasticity and Autocorrelation Consistent Covariance matrix estimation," *Econometrica* 59, 817-854.

Brown, R.L., J. Durbin and J.M.Evans (1975): "Techniques for Testing the Constancy of Regression Relationships over Time," JRSS Series B 37, 149-192.

Ploberger, W., W. Kramer and K. Kontrus (1989): "A new test for structural stability in the linear regression model," *Journal of Econometrics* 40, 307-318

Park, J. Y. and P. Phillips (1988): "Statistical Inference in Regressions with Integrated Processes: Part I," Econometric Theory 4, 468-497.

Phillips, P (1995): "Fully Modified Least Squares and Vector Autoregression," *Econometrica*, Vol. 63, 1023–1078.

3.4 VAR analysis

1 SEM and I(0)-VAR

2 I(1) VAR and ECM

3 Causality Test

Reference:

Johansen, S. (1991): "Estimation and hypothesis testing of Cointegration vectors in Gaussian vector Autoregressive Models," *Econometrica* 59, 1551-1580.

Hamilton, J. (1996): *Time Series Analysis*

Pesaran, H., Y. Shin and R. Smith (2000): "Structural Analysis of Vector Error Correction Models with Exogenous I(1) Variables," *Journal of Econometrics* 97, 293-343.

Toda, Hiro and T. Yamamoto (1995): "Statistical Inference in Vector Autoregressions with possibly integrated processes," *Journal of Econometrics* 66, 225-250.

3.5 Forecast Evaluation and Data Mining

1 Evaluation of the forecast performance

2 Cross Validation and Diebold-Marino Test

3 Data Mining Bias

Reference:

Ye, J (1998): "On Measuring and Correcting the Effects of Data Mining and Model Selection," *Journal of the American Statistical Association*, Vol 93, No 441, p120-131.

Diebold, F. and R. Mariano (1995): "Comparing Predictive Accuracy," *Journal of Business and Economic Statistics* Vol 13, No 3, p253-263.

4. Miscellaneous