



# B.E. International Program

## Faculty of Economics, Thammasat University



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### Course Outline

#### EE 435 Introductory Financial Econometrics

**Semester:** 1/2019 (August 13 – December 16, 2019)

**Number of credits:** 3 credits (3-0-6)

**Enrollment key for BE moodle:** 0389

**Lecture Time:** Tuesday and Thursday, 8.00-9.30 a.m.

**Lecture Venue:** Room 204, Faculty of Economics

**Instructor:** Assoc. Prof. Dr. Tatre Jantarakolica  
Office: Room 9, 60<sup>th</sup> Year Building  
E-mail: tatre@econ.tu.ac.th Tel. 02 613-2467  
Office hours: by appointment

#### Course Description:

The estimation methods of financial econometrics models, such as least square method and maximum likelihood, with the emphasis on time-series model including univariate time-series model, high frequency time-series model, multivariate time-series model; financial forecasting; The regression estimation of variables with long run relationship and short run dynamics; The application of model to analyze financial economics issues.

**Prerequisites:** EE325 (or EE425) and EE431

## **Course Objectives:**

This course aims to apply econometric methodology with the economic and financial theory in explaining empirical data, and introduce a more advanced econometrics methodology beyond basic econometrics, especially time series econometrics. The objective is to train students for empirical research. The course focuses mainly on model formulation, parametric estimation method, and applications of the model. Emphasize of the course will be on empirical examples rather than theoretical proof. However, students are all expected to have a good understanding of basic statistics, calculus, and matrix algebra. Thus, students are all responsible for all pre-requisites of the course. This course also aims to have students learn how to use computer software in estimating the econometric models by letting students work on empirical assignments concerning on each topic.

## **Required Text:**

Brooks, C. (2008). *Introductory Econometrics for Finance*. 2<sup>nd</sup> ed. New York, NY: Cambridge University Press.

Heij, C., de Boer, P., Franses, H.P., Kloek, T., & van Dijk, K.H. (2004). *Econometric Methods with Applications in Business and Economics*. New York, NY: Oxford University Press. (Chapter 4)

## **Supported Text:**

Baltagi, B.H. (2008). *Econometric Analysis of Panel Data*. 4<sup>th</sup> ed. West Sussex, UK: John Wiley & Sons.

Berndt, E.R. (1991). *The Practice of Econometrics: Classic and Contemporary*. New York: Addison-Wesley Publishing. (Chapter 2)

Enders, W. (2003). *Applied Econometric Time Series*. 2<sup>nd</sup> ed. New York: John Wiley & Sons.

Greene, W.H. (2008). *Econometric Analysis*. 6<sup>th</sup> ed. Upper Saddle River, NJ: Prentice Hall.

Hamilton, J.D. (1994). *Time Series Analysis*. Princeton, NJ: Princeton University Press.

Johnston, J., & DiNardo, J. (1997). *Econometric Methods*. 4<sup>th</sup> ed. Singapore: McGraw-Hill.

Ruud, P.A. (2000). *An Introduction to Classical Econometric Theory*. New York: Oxford University Press.

**Expected Learning Outcomes:**

**1. Morality and Ethics**

Applicability	Learning Goals	Expected Learning Outcomes
●	1.1 Students demonstrate integrity.	
●	1.2 Students prioritize social and public benefits over personal ones.	
●	1.3 Students are punctual and comply with the code of conduct of the institution and society at large.	
●	1.4 Students are responsible and accountable to society, the nation, and the subject of economics.	
○	1.5 Students realize the cultural and environmental value of the sustainable society.	

**2. Knowledge**

Applicability	Learning Goals	Expected Learning Outcomes
●	2.1 Students know and understand modern economics principles and theories, and are up to date with new developments.	
●	2.2 Students know and understand Thai and global economic structure, and the importance of major international economic events.	
○	2.3 Students know and understand instruments of economic analysis.	
●	2.4 Students know and understand applied fields in economics, including monetary, public, international, business, natural resource and environmental, industrial, agricultural, cooperative, political, developmental, and entrepreneurial economics as well as agribusiness.	
○	2.5 Students are informed about related fields including sociology, business administration, education, law policy, and science.	

### 3. Intellectual Development

Applicability	Learning Goals	Expected Learning Outcomes
●	3.1 Students have developed individual critical thinking.	
●	3.2 Students are sufficiently trained in research skills.	
●	3.3 Students demonstrate an ability to analyze and synthesize data, as well as appropriately integrate economics concepts to understand causes of current economic problems in Thailand. Based on analysis and synthesis, students demonstrate an ability to propose policy guidelines to resolve problems.	

### 4. Interpersonal Skills and Responsibilities

Applicability	Learning Goals	Expected Learning Outcomes
●	4.1 Students are responsible for assigned tasks and work in groups effectively.	
●	4.2 Students have problem-solving skills.	
○	4.3 Students show leadership skills and team spirit.	
●	4.4 Students are always improving themselves.	
○	4.5 Students have good interpersonal skills, adapting and working under different conditions.	

## 5. Quantitative Analysis, Communication and Information Technology

Applicability	Learning Goals	Expected Learning Outcomes
○	5.1 Students select and apply appropriate statistical and mathematical methods for data processing, interpretation, conclusions, and recommendations to resolve problems.	
○	5.2 Students communicate effectively and select appropriate presentation methods.	
○	5.3 Students use information and communication technologies appropriately to gather data as well as process, interpret, and present results.	

### Grading:

1. Assignments	20%
2. Midterm Exam	35%
3. Final Exam	<u>45%</u>
	<u>100%</u>

## Teaching Plan:

### Class Schedule

Week	Date	Content	Reading
1	13/8/2019	<u>Review Least Squares Estimation Method</u> - Ordinary Least Squares Estimation Method	Ch 1-2
	15/8/2019	<u>Review Least Squares Estimation Method</u> - Least Squares Estimation – Matrix Approach - Generalized Least Squares Estimation Method	Ch 3-4
2	20/8/2019	<u>Application of Simple Regression Model</u> Capital Asset Pricing Model Spot & Future Market <u>Application of Multiple Regression Model</u> Fama-French Three Factor Model	Handout
	22/8/2019	<u>Application of Dummy Variable Technique</u> Calendar Effect in Stock Market	Handout
3	27/8/2019	<u>Simultaneous Equation Model</u> Simultaneous Biased	Ch 6
	29/8/2019	<u>Simultaneous Equation Model</u> Indirect Least Squares (ILS) Two Stage Least Squares (2SLS) Three Stage Least Squares (3SLS)	Ch 6
4	3/9/2019	<u>Maximum Likelihood Estimation (MLE) Method</u> Concept	Heij 4
	5/9/2019	<u>Maximum Likelihood Estimation (MLE) Method</u> Computation Inferential Statistics	Heij 4
5	10/9/2019	<u>Limited Dependent Variable Models</u> Logit & Probit Model – Concept	Ch 11
	12/9/2019	<u>Limited Dependent Variable Models</u> Logit & Probit Model – Inferential Statistics	Ch 11
6	17/9/2019	<u>Limited Dependent Variable Models</u> Multinomial Logit & Probit Model Order Probit Model	Ch 11
	19/9/2019	<u>Limited Dependent Variable Models</u> Censored Regression Model Truncated Regression Model	Ch 11
7	24/9/2019	Univariate Time Series Models Stationary vs Nonstationary	Ch 5
	26/9/2019	Univariate Time Series Models (cont.) Integrated Series	Ch 5
8	<b>1/10/2019 9:00-11:00</b>	<b>Midterm Exam</b>	

Week	Date	Content	Reading
9	8/10/2019	<u>Univariate Time Series Models</u> (cont.) Unit Root Test	Ch 5
	10/10/2019	<u>Time Series Models</u> (cont.) Cointegration & Error Correction Models	Ch 5
10	15/10/2019	<u>Univariate Time Series Models</u> (cont.) ARIMA Model – Estimation	Ch 5
	17/10/2019	<u>Univariate Time Series Models</u> (cont.) ARIMA Model – Forecast	Ch 5
11	22/10/2019	<u>Multivariate Time Series Models</u> Vector Autoregressive (VARs) Model – Concept	Ch 6
	24/10/2019	<u>Multivariate Time Series Models</u> (cont.) Vector Autoregressive (VARs) Model – Procedure	Ch 6
12	29/10/2019	<u>Multivariate Time Series Models</u> (cont.) Impulse Response Analysis	Ch 6
	31/10/2019	<u>Multivariate Time Series Models</u> (cont.) Orthogonal Impulse Response Analysis	Ch 6
13	5/11/2019	<u>Multivariate Time Series Models</u> (cont.) Forecast Error Variance Decomposition	Ch 6
	7/11/2019	<u>Modelling Long-run Relationships in Finance</u> Engle Granger Cointegration Test	Ch 7
14	12/11/2019	<u>Modelling Long-run Relationships in Finance</u> (cont.) Johansen Cointegration Test	Ch 7
	14/11/2019	<u>Modelling Long-run Relationships in Finance</u> (cont.) Vector Error Correction Models (VECM)	Ch 7
15	19/11/2019	<u>Modelling Volatility and Correlation</u> Autoregressive Conditional Heteroscedasticity (ARCH) ARCH-M	Ch 8
	21/11/2019	<u>Modelling Volatility and Correlation</u> (cont.) Generalized Autoregressive Conditional Heteroscedasticity (GARCH) EGARCH	Ch 8
15	26/11/2019	<u>Panel Data Models</u> Characteristic of Data and Problems. Model with Heteroscedasticity, Autocorrelation and Cross-sectional Correlation.	Ch 10
	28/11/2019	<u>Panel Data Models</u> Fixed Effects Models. Random Effects Models.	Ch 10
16	<b>9/12/2019 09:00-12:00</b>	<b>Final Exam</b>	

## Remarks:

- ◆ **Mid-Term Examination** (Tuesday, October 1, 2019, 09.00 - 11.00 hrs.)
- ◆ **Final Examination** (Monday, December 9, 2019, 09.00 – 12.00 hrs.)

 <b>ACADEMIC CALENDAR SEMESTER 1/2019</b>	
<b>Event</b>	<b>Semester 1 (August - December 2019)</b>
Pre-Registration period (BE Portal)	July 8 - 10, 2019
Course Registration (Reg TU)	July 23 - 26, 2019
Payment	July 23 - 29, 2019
Classes Begin	August 13, 2019
Adding and Dropping Courses W/O Record	August 13 - 26, 2019
Payment	August 13 - 27, 2019
Mid-term Examination Period	September 30 - October 5, 2019
<i>His Majesty the late King Bhumibol Adulyadej Memorial Day*</i>	<i>October 13, 2019</i>
<i>Substitution for His Majesty the late King Bhumibol Adulyadej Memorial Day*</i>	<i>October 14, 2019</i>
Course Withdrawal With "W"	October 16 - 21, 2019
<i>King Chulalongkorn Memorial Day*</i>	<i>October 23, 2019</i>
Last Day of Classes	December 1, 2019
Final Examination Period	December 2-4, 6-9, 11-16, 2019
<i>The birthday of His Majesty the late King Bhumibol Adulyadej*</i>	<i>December 5, 2019</i>
<i>Constitution Day*</i>	<i>December 10, 2019</i>

Remark:  
\* Holiday, No classes during this period