

Fulbright Economics Teaching Program
Academic Year 2015-2016

Fall semester

(29th Sept. 2015 – 16th Jan. 2015)

Quantitative Methods

Teaching team

Instructors: Cao Hao Thi, Dinh Cong Khai
Tutor: Hoang Van Thang, Do Vu Gia Linh

Class Meeting Time

Tuesday & Thursday 10:15 to 11:45
Friday 13:30 to 15:00

Office hours

Cao Hao Thi: Tuesday 17:45 – 19:15
Dinh Cong Khai: Tuesday 14:00 – 17:00
Hoang Van Thang: Monday, Friday: 15:30 – 17:00

Office hours are for groups or individual to exchange ideas and discuss the course material or to need more help. The timings of the office hours are sometimes changed to help the students before the exams and before the assignments due date.

If the timings of the office hours are not convenient, please feel free to make appointments at other times during the week to meet with members of the Teaching Team via email or faculty dropbox.

Course Objectives and Description

The Quantitative Methods course is designed with two objectives. The first is to provide participants with the ability to analyze critically quantitative and empirical analysis done by others and to use that analysis in the design of public policy. The second is to provide students with the skills necessary to perform quantitative policy analysis on their own.

The course includes two main parts:

- Applied statistics
- Econometrics

The applied statistics module will review fundamental concepts of statistics, including descriptive statistics, basic probability, probability distributions, sampling and sample distribution, estimation and hypothesis testing. This module provides the foundation for

participants to study econometric analysis.

The second half of the course is devoted to the teaching of fundamental tools of econometrics. The module introduces the standard methods for estimating relationships among observed social and economic variables and for testing hypotheses about their relationships. Participants will learn how to use models, data, and appropriate analysis to describe the real world and to contribute to policy discussions. Participants will be introduced to the power of econometric methods while also noted about their limitations. The focus will be on formulation, estimation, testing of econometric models, and discussing policy implications from econometric findings. In addition, participants will also learn how to carry out an empirical study through a term project. The course will required the use of specialized software packages such as Eviews, SPSS and Stata.

Given its technical nature, the Quantitative Methods course is a very challenging subject for participants. It is absolutely critical that participants have to maintain a steady pace of study. Simple memorization, and last-minute studying will not help to understand well the application to the real world. Therefore, if participants encounter any problems or have any questions, make sure to seek help from the teaching team as early as possible. It is important to understand concepts and develop the ability to apply them to the solutions of various problems. This takes practice. The lectures, textbooks, handouts, problem sets, and the term project are all designed to help our participants develop these skills.

Course Requirements

Participants are required to read the assigned readings before the class. During the course participants will have to complete problem sets, a term project, and two exams associated with the two parts of the course.

The term project must be done by groups of five to six participants. A one-page project proposal must be submitted to the teaching team for approval on **28 November 2015**. A draft project report must be submitted on **12 December 2015** and the final report on **06 January 2015**. After that the teaching team will meet each group on Thursday, **08 Jan 2015** and Friday, **09 Jan 2015** to evaluate the project and each student's contribution in the group project.

Participants are encouraged to form study groups on their own to discuss the lessons, problem sets and reviews together. However, each student has to complete his/her assignments using his/her own writings.

Grading

Applied statistics:	40%
Problem sets:	15%
Exam:	25%
Econometrics:	60%
Problem sets:	15%
Term project:	20%
Exam:	25%

Readings

Statistics

1. Mendenhall, Beaver, and Beaver, *A Brief Course in Business Statistics*, 2nd Edition, Thompson South-Western, 2001. (Abbreviation: MBB2)
2. Cao Hào Thi, *Thống Kê Ứng Dụng trong Kinh Doanh (Applied Statistics in Business)*, 1998.

Econometrics

• Required readings

Main Textbooks. Lectures will be drawn mostly from two textbooks, both of which are available in English and Vietnamese. Specific chapter references are given in the course outline. Additional material will be distributed at appropriate times. This material will also be part of required readings.

1. *Introductory Econometrics with Applications*, 5th edition, by Ramu Ramanathan, Harcourt College Publishers, 2003. This textbook has been selected because it has a strong orientation towards applications and a clear exposition of modern econometric practice. The textbook has a good website at: <http://econ.ucsd.edu/~rramanat/embook5.htm>. (Abbreviation: RR5).
2. *Basic Econometrics*, 3rd edition, by Damodar Gujarati, McGraw-Hill, 1995. This book also has a useful website at: <http://www.mhhe.com/econometrics/gujarati4> (Please note that this website is associated with the 4th edition of the book.) ((Abbreviation: DG3)

Exercises. Several exercises and illustrative examples will be assigned and/or discussed in class at appropriate times. The purpose is to familiarize you with the various ways in which econometric techniques have been used to investigate “real world” problems and policy issues. These exercises will be drawn from the two main textbooks plus some case studies developed from the real context of Vietnam.

• Optional readings

The following optional readings are available in the FETP library.

Econometrics and Data Analysis for Developing Countries by Chandan Mukherjee, Howard White, and Marc Wuyts. This is very basic and applied.

Econometric Models and Economic Forecasts, third edition, by Robert S. Pindyck and Daniel L. Rubinfeld. This is somewhat out of date but the level is accessible. It is available in English and Vietnamese.

Econometric Methods, third edition, by J. Johnston. This is one of the classic texts for advanced undergraduates and beginning graduate participants.

Software

Eviews by Quantitative Micro Systems. *Eviews Learning Scripts* will be translated into Vietnamese and distributed.

SPSS (Statistical Package for Social Sciences), Hoang Trong & Chu Nguyen Mong Ngoc, Hong Duc Publication House 2008

Schedule

APPLIED STATISTICS

Week 1

☐ Tuesday 30th Sept. 2014

Cao Hao Thi

Descriptive Statistics

Measures of central tendency: mean, median, and mode

- MBB2, Chapter 2

Problem Set 1 Distributed

☐ Thursday 2nd Oct. 2014

Cao Hao Thi

Descriptive Statistics

Measures of variability and correlation: variance, standard deviation, covariance and correlation

- MBB2, Chapter 2

Week 2

☐ Tuesday 07th Oct. 2014

Cao Hao Thi

Basic Probability

Probability concepts
Probability properties

- MBB2, Chapter 3, Sections 3.1-3.3

Problem set 1 Due; Problem set 2 Distributed

☐ Thursday 09th Oct. 2014

Cao Hao Thi

Conditional Probability

Conditional probability
Bayes' rule

- MBB2, Chapter 3, Sections 3.4-3.5

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- ☐ **Friday 10th Oct. 2014**
Review

Dinh Cong Khai

Week 3

- ☐ **Tuesday 14th Oct. 2014**

Cao Hao Thi

Probability Distributions: Discrete Distributions

Binomial distribution
Poisson distribution

- MBB2, Chapter 3, Sections 3.6
- MBB2, Chapter 4

Problem set 2 Due; Problem set 3 Distributed

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- ☐ **Thursday 16th Oct. 2014**

Cao Hao Thi

Probability Distributions: Continuous Distributions

Uniform distribution
Normal distribution

- MBB2, Chapter 5

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- ☐ **Friday 17th Oct. 2014**

Dinh Cong Khai

Review

Week 4

- ☐ **Tuesday 21st Oct. 2014**

Cao Hao Thi

Sampling

Sampling distribution
The central limit theorem

- MBB2, Chapter 6

Problem set 3 Due; Problem set 4 Distributed

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- ☐ **Thursday 23rd Oct. 2014**

Dinh Cong Khai

Statistical Estimation

Point estimation
Confidence Intervals

- MBB2, Chapter 7

☐ **Friday 24th Oct. 2014**

Dinh Cong Khai

Review

Week 5

☐ **Tuesday 28th Oct. 2014**

Dinh Cong Khai

Hypothesis Testing

Tests of Hypotheses for Population Means

Tests of Hypotheses for the Difference between Two Population Means

- MBB2, Chapter 8, Sections 8.1-8.5

Problem set 4 Due; Problem set 5 Distributed

☐ **Thursday 30th Oct. 2014**

Dinh Cong Khai

Hypothesis Testing

Tests of Hypotheses for Population Proportions

Tests of Hypotheses for the Difference between Two Population Proportions

- MBB2, Chapter 8, Sections 8.7-8.8

☐ **Friday 31st Oct. 2014**

Cao Hao Thi

Review

Week 6

☐ **Tuesday 04th Nov. 2014**

Dinh Cong Khai

Introduction to Econometrics

Simple Regression: The Basic Model and OLS

- RR5 Chapter 3, Sections 3.1 and 3.2; 3.A.3
- DG3 Chapter 2 and Chapter 3, Sections 3.1 and 3.2

Problem set 5 due; Problem set 6 Distributed

☐ **Thursday 06th Nov. 2014**

Dinh Cong Khai

Simple Regression: Properties of Estimators and Fitted Values

- RR5 Chapter 3, Sections 3.3 and 3.4; 3.A.4, 3.A.6

- Friday 07th Nov. 2014**
Review for midterm exam

Cao Hao Thi

ECONOMETRICS

Week 7

- Tuesday 11th Nov. 2014**
Term Project Introduction

Cao Hao Thi

Problem set 6 Due; Problem set 7 Distributed

- Thursday 13th Nov. 2014**
Simple Regression: Hypothesis Tests & Confidence Intervals

Dinh Cong Khai

- RR5 Chapter 3, Sections 3.5, 3.6, 3.8, 3.9, 3.10;
- DG3 Chapter 3, Section 3.5. Sections 3.6 - 3.8 optional.
- DG3 Chapter 5, Sections 5.1 - 5.8

- Friday 14th Nov. 2014**
Review

Cao Hao Thi

Week 8

- Monday 17th Nov. 2014**

Midterm Exam (8:30 AM)

Exam for the Economic Degree Conversion Program (01:30 PM)

Week 9

- Tuesday 25th Nov. 2014**
Lab Practice: Lessons on Eview/Stata/SPSS and exploring VHLSS (1)

Nguyen Khanh Duy

- Thursday 27th Nov. 2014**
Lab Practice: Lessons on Eview/Stata/SPSS and exploring VHLSS (2)

Nguyen Khanh Duy

- Friday 28th Nov. 2014**
Lab Practice: Lessons on Eview/Stata/SPSS and exploring VHLSS (3)

Nguyen Khanh Duy

Proposal of Term Project Due

Week 10

☐ **Tuesday 02nd Dec. 2014**

Dinh Cong Khai

Multiple Regression: Introduction & Estimation

- RR5 Chapter 4, Sections 4.1 and 4.2
- DG3 Chapter 7, Sections 7.1 - 7.5

Problem set 7 Due; Problem set 8 Distributed

☐ **Thursday 04th Dec. 2014**

Dinh Cong Khai

Multiple Regression: Estimation (Continued)

- RR5 Chapter 4, Sections 4.1 and 4.2
- DG3 Chapter 7, Sections 7.1 - 7.5

☐ **Friday 05th Dec. 2014**

Mai Hoang Chuong

Review

Week 11

☐ **Tuesday 09th Dec. 2014**

Dinh Cong Khai

Multiple Regression: Model Selection and Hypothesis Testing

- RR5 Chapter 4, Sections 4.3 and 4.4
- DG3 Chapter 8, Sections 8.1 - 8.5

Problem set 8 Due; Problem set 9 Distributed

☐ **Thursday 11th Dec. 2014**

Dinh Cong Khai

Multiple Regression: Model Selection and Hypothesis Testing (continued)

- RR5 Chapter 4, Sections 4.3 and 4.4
- DG3 Chapter 8, Sections 8.1 - 8.5

☐ **Friday 12th Dec. 2014**

Cao Hao Thi

Review

First Draft of Term Project Due

Week 12

☐ Tuesday 16th Dec. 2014

Dinh Cong Khai

Specification Error:

Omission of Relevant Variables and Inclusion of Irrelevant Ones

- RR5, Section 4.5
- DG3, Chapter 13

Problem set 9 Due; Problem set 10 Distributed

☐ Thursday 18th Dec. 2014

Dinh Cong Khai

Functional Form

- RR5, Sections 6.1 - 6.12
- DG3, Sections 6.3, 7.10, 7.11

☐ Friday 19th Dec. 2014

Cao Hao Thi

Empirical Study & Modeling strategy

Week 13

☐ Tuesday 23th Dec. 2014

Dinh Cong Khai

Qualitative Independent Variables (Dummy Variables)

- RR5, Chapter 7
- DG3, Chapter 15

Problem set 10 Due; Problem set 11 Distributed

☐ Thursday 25th Dec. 2014

No class

☐ Friday 26th Dec. 2014

No class

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Week 14

☐ **Tuesday 30st Dec. 2014**

Dinh Cong Khai

Limited Dependent Variable

DG3, Chương 16

☐ **Thursday 01st Jan. 2015**

No class

☐ **Friday 02nd Jan. 2015**

No class

Week 15

☐ **Tuesday 06th Jan. 2015**

TBA

Empirical Study

Problem set 11 Due

Term project due

☐ **Thursday 08th Jan. 2015**

8:30 AM – 10:00 AM: Final review

Cao Hao Thi

1:30 PM – 3:00 PM: Term project presentation

Cao Hao Thi & Dinh Cong Khai

☐ **Friday 09th Jan. 2015**

Cao Hao Thi & Dinh Cong Khai

Term project presentation

Week 16

☐ **Friday 16th Jan. 2015**

Cao Hao Thi & Dinh Cong Khai

Final exam
