Fulbright Economics Teaching Program
Academic Year 2013-2014
Fall semester
(01st Oct. 2013 – 21st Jan. 2014)

Quantitative Methods

Teaching team

Instructors:	Cao Hao Thi, Dinh Cong Khai
Co-instructors:	Mai Hoang Chuong
Tutor:	Dinh Hoang Thang

Class Meeting Time

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

Office hours

Cao Hao Thi:	Tuesday 17:45 – 19:30
Dinh Cong Khai:	Tuesday 14:00 – 17:00
Mai Hoang Chuong:	Friday Tuesday 15:30 – 17:30
Dinh Hoang Thang:	Tuesday, Thursday, Friday: 16:00 – 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 **29 November 2013**. A draft project report must be submitted on **13 December 2013** and the final report on **03 January 2014**. After that the teaching team will meet each group on Thursday, **09 Jan 2014** and Friday, **10 Jan 2014** 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 Forecast*s, 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 Method*s, 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 01st Oct. 2013**   **Cao Hao Thi**

Descriptive Statistics
   Measures of central tendency: mean, median, and mode

   o   MBB2, Chapter 2

Problem Set 1Distributed

❑ **Thursday 03rd Oct. 2013**   **Cao Hao Thi**

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

   o   MBB2, Chapter 2

Week 2

❑ **Tuesday 08th Oct. 2013**   **Cao Hao Thi**

Basic Probability
   Probability concepts
   Probability properties

   o   MBB2, Chapter 3, Sections 3.1-3.3

Problem set 1 Due; Problem set 2 Distributed

❑ **Thursday 10th Oct. 2013**   **Cao Hao Thi**

Conditional Probability
   Conditional probability
   Bayes' rule

   o   MBB2, Chapter 3, Sections 3.4-3.5

❑ **Friday 11th Oct. 2013**   **Mai Hoang Chuong**

   Review

Week 3

❑ **Tuesday 15th Oct. 2013**   **Cao Hao Thi**

    Probability Distributions: Discrete Distributions
        Binomial distribution
        Poisson distribution

          o   MBB2, Chapter 3, Sections 3.6
          o   MBB2, Chapter 4

Problem set 2 Due; Problem set 3 Distributed

❑ **Thursday 17th Oct. 2013**   **Cao Hao Thi**

    Probability Distributions: Continuous Distributions
        Uniform distribution
        Normal distribution

          o   MBB2, Chapter 5

❑ **Friday 18th Oct. 2013**   **Mai Hoang Chuong**

    Review

Week 4

❑ **Tuesday 22nd Oct. 2013**   **Cao Hao Thi**

    Sampling
        Sampling distribution
        The central limit theorem

          o   MBB2, Chapter 6

Problem set 3 Due; Problem set 4 Distributed

❑ **Thursday 24th Oct. 2013**   **Dinh Cong Khai**

    Statistical Estimation
        Point estimation
        Confidence Intervals

          o   MBB2, Chapter 7

❑ **Friday 25th Oct. 2013**   **Mai Hoang Chuong**

    Review

Week 5

❑ **Tuesday 29thOct. 2013**   **Dinh Cong Khai**

Hypothesis Testing
Tests of Hyphotheses for Populuation Means
Tests of Hyphotheses for the Difference between Two Population Means

   o   MBB2, Chapter 8, Sections 8.1-8.5

Problem set 4 Due; Problem set 5 Distributed

❑ **Thursday 31st Oct. 2013**   **Dinh Cong Khai**

Hypothesis Testing
Tests of Hyphotheses for Population Proportions
Tests of Hyphotheses for the Difference between Two Population Proportions

   o   MBB2, Chapter 8, Sections 8.7-8.8

❑ **Friday 01st Nov. 2013**   **Mai Hoang Chuong**

   Review

Week 6

❑ **Tuesday 05th Nov. 2013**   **Nguyen Khanh Duy**

   Lab Practice: Lessons on Eview/Stata/SPSS and exploring VHLSS (1)

   Problem set 5 Due

❑ **Thursday 07th Nov. 2013**   **Cao Hao Thi**

   Introduction to the Term Project

❑ **Friday 08th Nov. 2013**   **Cao Hao Thi**

   Review for Mid-term Exam

ECONOMETRICS

Week 7

❑ **Tuesday 12ᵗʰ Nov. 2013**   **Dinh Cong Khai**

**Introduction to Econometrics
Simple Regression: The Basic Model and OLS**

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

Problem set 6 Distributed

❑ **Thursday 14ᵗʰ Nov. 2013**   **Dinh Cong Khai**

Simple Regression: Properties of Estimators and Fitted Values

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

❑ **Friday 15ᵗʰ Nov. 2013**   **Nguyen Khanh Duy**

Lab Practice: Lessons on Eview/Stata/SPSS and exploring VHLSS (2)

Week 8

❑ **Monday morning 18ᵗʰ Nov. 2013**

Mid-term Exam (8:30)

Exam for the Economic Degree Conversion Program (13:30)

Week 9

❑ **Tuesday 26ᵗʰ Nov. 2013**   **Dinh Cong Khai**

Simple Regression: Hypothesis Tests & Confidence Intervals

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

Problem set 6 Due; Problem set 7 Distributed

❑ **Thursday 28ᵗʰ Nov. 2013**   **Nguyen Khanh Duy**

Lab Practice: Lessons on Eview/Stata/SPSS and exploring VHLSS (3)

❑ **Friday 29th Nov. 2013**   **Mai Hoang Chuong**

    Review

    Proposal of Term Project Due

Week 10

❑ **Tuesday 03rd Dec. 2013**   **Dinh Cong Khai**

    Multiple Regression: Introduction & Estimation

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

Problem set 7 Due; Problem set 8 Distributed

❑ **Thursday 05th Dec. 2013**   **Dinh Cong Khai**

    Multiple Regression: Estimation (Continued)

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

❑ **Friday 06th Dec. 2013**   **Mai Hoang Chuong**

    Review

Week 11

❑ **Tuesday 10th Dec. 2013**   **Dinh Cong Khai**

    Multiple Regression: Model Selection and Hypothesis Testing

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

Problem set 8 Due; Problem set 9 Distributed

❑ **Thursday 12th Dec. 2013**   **Dinh Cong Khai**

    Multiple Regression: Model Selection and Hypothesis Testing (continued)

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

❑ **Friday 13th Dec. 2013**   **Mai Hoang Chuong**

    Review

First Draft of Term Project Due

Week 12

❑ **Tuesday 17ᵗʰ Dec. 2013**   **Dinh Cong Khai**

Specification Error:
Omission of Relevant Variables and Inclusion of Irrelevant Ones

- o   RR5, Section 4.5
- o   DG3, Chapter 13

Problem set 9 Due; Problem set 10 Distributed

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❑ **Thursday 19ᵗʰ Dec. 2013**   **Dinh Cong Khai**
Functional Form

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

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❑ **Friday 20ᵗʰ Dec. 2013**   **Cao Hao Thi**

Empirical Study & Modeling strategy

Week 13

❑ **Tuesday 24ᵗʰ Dec. 2013**

 No class

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❑ **Thursday 26ᵗʰ Dec. 2013**   **Dinh Cong Khai**

Qualitative Independent Variables (Dummy Variables)

- o   RR5, Chapter 7
- o   DG3, Chapter 15

❑ *Problem set 10 Due; Problem set 11 Distributed*

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❑ **Friday 27ᵗʰ Dec. 2013**   **Dinh Cong Khai**

Limited Dependent Variable

- o   DG3, Chương 16

Week 14

❑ **Tuesday 31st Dec. 2013**

   No class

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❑ **Thursday 02nd Jan. 2014**   **Mai Hoang Chuong**

   Review

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❑ **Friday 03th Jan. 2014**   **TBA**

   Problem set 11 Due

   Empirical Study

Week 15

❑ **Tuesday 07th Jan. 2014**   **Cao Hao Thi**

   Final review

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❑ **Thursday 09th Jan. 2014**   **Cao Hao Thi & Dinh Cong Khai**

   Term project presentation

❑ **Friday 10th Jan. 2014**   **Cao Hao Thi & Dinh Cong Khai**

   Term project presentation

Week 16

❑ **Friday 17th Jan. 2014**   **Cao Hao Thi & Đinh Cong Khai**

   Final exam