

Econometrics

Chapter 1: Introduction

In Choi

Sogang University

- What is econometrics?
 - Econometrics studies how statistical and mathematical methods can be used for economic data analysis.
- When and how did econometrics start?
 - Testing the law of supply and demand
 - Simultaneous equations system for national economies (Tinbergen, Klein, etc.)
 - See Mary Morgan (1990) *The History of Econometric Ideas*, Cambridge University Press.

Purposes of econometrics

Testing economic theories

- Economics theories are logical products of economists' minds. It is not certain that they can really explain real economy. Data analysis is required to test the theories.
- Example 1: Does the law of supply demand hold?
- Example 2: Is the Keynesian consumption function appropriate to explain aggregate consumption?
- Example 3: Is money demand sensitive to interest rates as economic theories predict?
- Example 4: Does college education induce higher wage? If so, how much?

Purposes of econometrics

Policy analysis

- Economic policies are implemented based on economic reasoning and theories. Effectiveness of an economic policies need to be examined by econometrics.
- Example 1: How much do cigarette taxes reduce smoking?
- Example 2: Does reducing class size improve elementary school education?
- Example 3: Does raising interest rates cool the economy?
- Example 4: Does introducing minimum wage increase unemployment rate?
- Example 5: Does gun control reduce crime?
- Example 6: Does harsh sentencing reduce crime?

Purposes of econometrics

Forecasting

- Using data, we can forecast future courses of economic variables.
- Example 1: What will be the US dollar price of the Japanese yen six months later?
- Example 2: What will be the rate of inflation next year?

Data for econometric analysis

- Cross-sectional data: data collected with respect to individuals, households, firms, cities, etc. at a given point in time.
- Time series data: data collected over time with respect to economic variables (e.g., interest rate, Hang Seng index, inflation rates)
- Panel data: collection of cross-sectional data over time

Steps for empirical research

- ① Economic model (based on economic reasoning, intuition, theory and experience)
- ② Gather data on relevant variables
- ③ Build an econometric model and estimate it.
- ④ Check the adequacy of the econometric model of Step 3. If inadequate, repeat Step 3

- International Financial Statistics (available in our library)
- Web pages of central banks
- World Bank Web page
- CIA Web page
- Web page of our text
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