Lecture 1: Introduction Course and Macroeconomics

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Your Instructor

- My name is Hui-Jun Chen, you can call me HJ for convenience.
- I am interested in housing, used capital market, and their macroeconomics implications.
- In my leisure time, I also like to investigate the Linux system.
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Basics

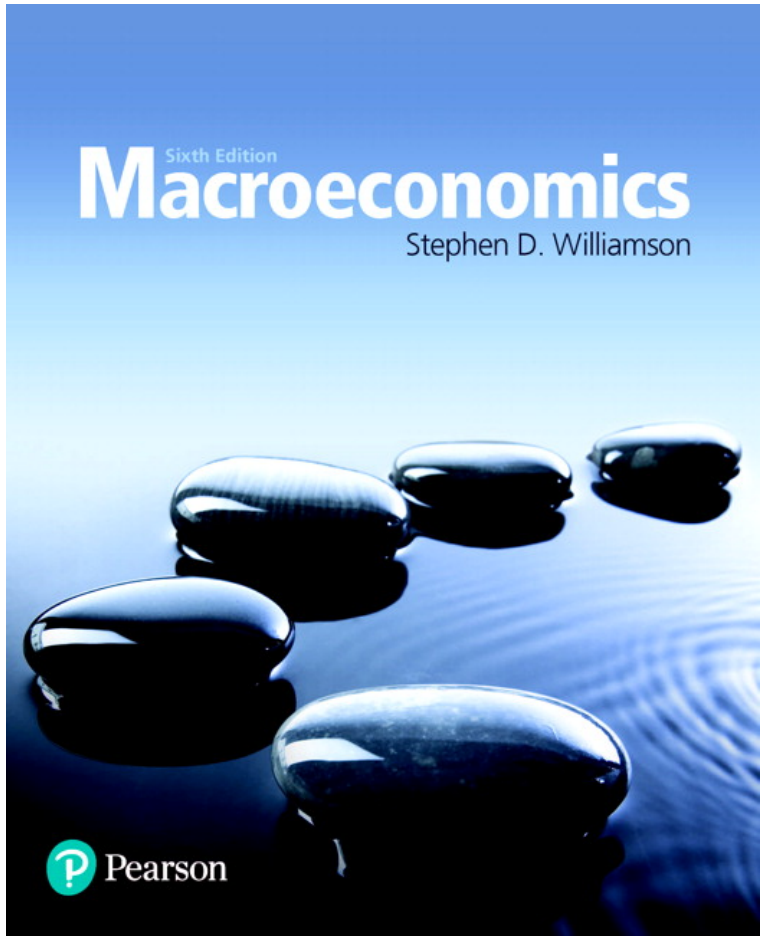
- Class Meetings: Tuesday and Thursday, 11:40 AM to 1:15 PM
- Zoom Info:
  - Meeting ID: 951 7226 1996
  - Password: 946301
  - Direct Link: https://tinyurl.com/2s4hr365 (Shorten by tinyurl)
- Documents and lecture recordings will be posted on Course Website:
  - Direct Link: https://tinyurl.com/yfpt8nsn
- Announcement, quiz and exams will be made via Carmen
  - Direct Link: https://osu.instructure.com/courses/121985

Basics (Cont.)

- To get email reply, you **must** satisfy two conditions below:
  1. DO **NOT** SEND TO CARMEN EMAIL
  2. Use `[E4002.01]` at the beginning of your subject title
     - example title: `[E4002.01] Question regarding Extra credit`
- I will reply your email within *2 business day*.
- Office hour: One hour before the lecture
  - Tuesday and Thursday, 10:40AM - 11:40AM, on Zoom Link
  - Please tell me if you plan on coming!

Expectation

- **Attendance**: recommended but not required
- **Participation**: can ask question anytime during the lecture
  - Just interrupt me by asking. Can check zoom chat but might not very often.
- **Prerequisites**: Principle of Economics (ECON 2001 & 2002), Basic Algebra
- **Calculus**: better to know in advance, but will learn via video series The Essence of Calculus



Recommended but not required textbook

Quiz, Exam and Homework

- **Quiz**: Weekly by watching The Essence of Calculus (20%)
  - unlimited time and trials w/ a week, meant to encourage!
  - Will drop 1 lowest quiz between Ch. 1-9.
- **Exam**: Midterm and Cumulative Final, 30% each
  - Midterm: June 23Th, 2022
  - Final: August 2nd, 2022
- **Homework**: on Carmen (20%)
  - A good representation for exam
  - step-by-step guidance on calculation
- Schedule and Deadline: see syllabus

Course Plan

- **Module 1**: Measurement (Week 1)
  - stylized facts about Economics growth and business cycle
- **Module 2**: One-period (static) model (Week 2-6)
  - micro foundation: consumers and firms
  - macro implication: equilibrium, efficiency, resource allocation w/ data
- **Module 3**: Two-period (dynamic) model (Week 8-12)
  - module 2 + time: intertemporal substitution

What is Macro?

- "macro is a method"
- Models (theory) + Data (empiric) = explanation to macro events
  - w/o models: only correlation
  - w/o data: only imagination
  - Friedman's critique: models are judged by prediction power
- Macro events in this class: long-run growth and business cycle
  - what drives long-run trend in US GDP?
  - what causes the fluctuation in GDP growth?
- Macro connects with micro
  - individual decisions (micro) $\Rightarrow$ aggregates (macro)

Data Example: GDP per capita

- **Definition**: Gross Domestic Product per individual
  - quantity produced of goods + services w/i country border at given period of time
- **Measurement**: 3 possible approaches
  - Product, Expenditure, Income
  - Source: National Income and Product Accounts (NIPA)
- **Analysis**: separation data into trend and business cyclie

Real GDP per capita, 1900-2014

Figure 1.1: Per Capita Real GDP (in 2009 dollars) for the United States, 1900–2014

Y

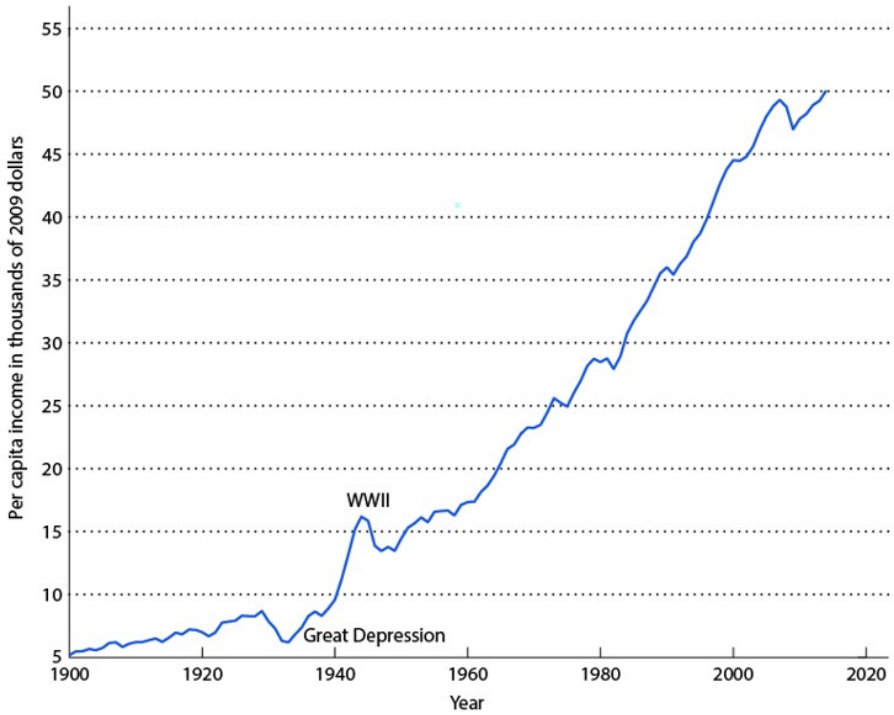
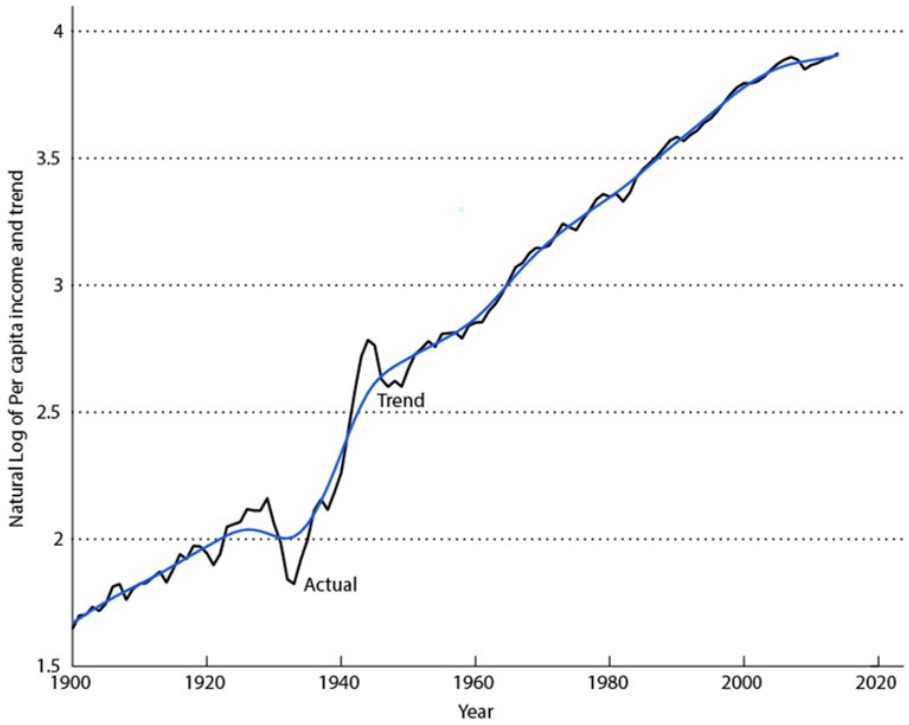


Figure 1.3: Natural log of Per Capita Real GDP and trend, 1900–2014

$y = \ln(Y), trend = HPFilter(y)$



Business Cycle: Deviation from Trend

Figure 1.4 Percentage Deviation from Trend in Per Capita Real GDP

actual - trend

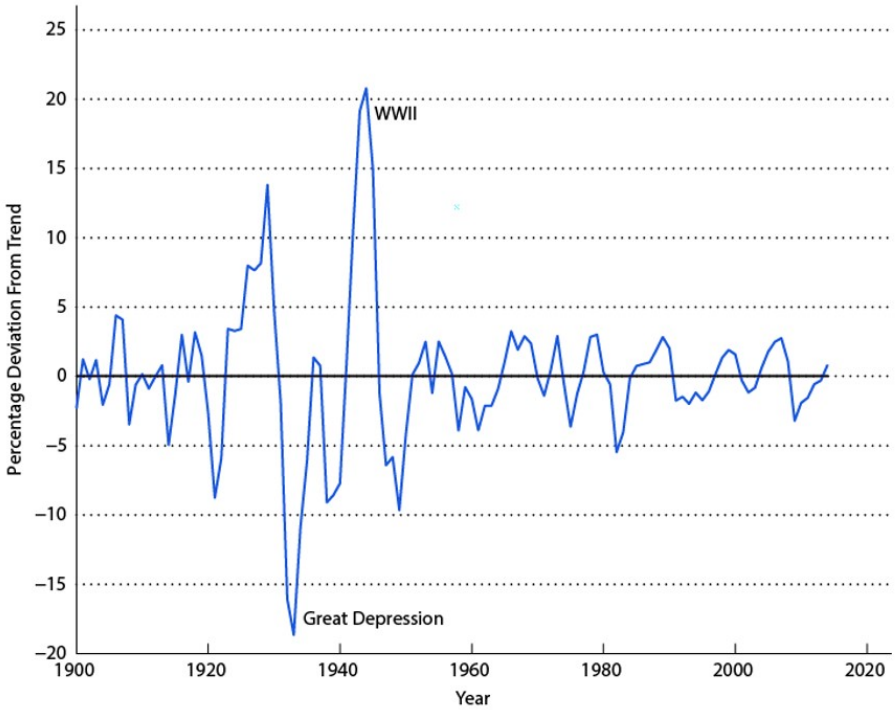
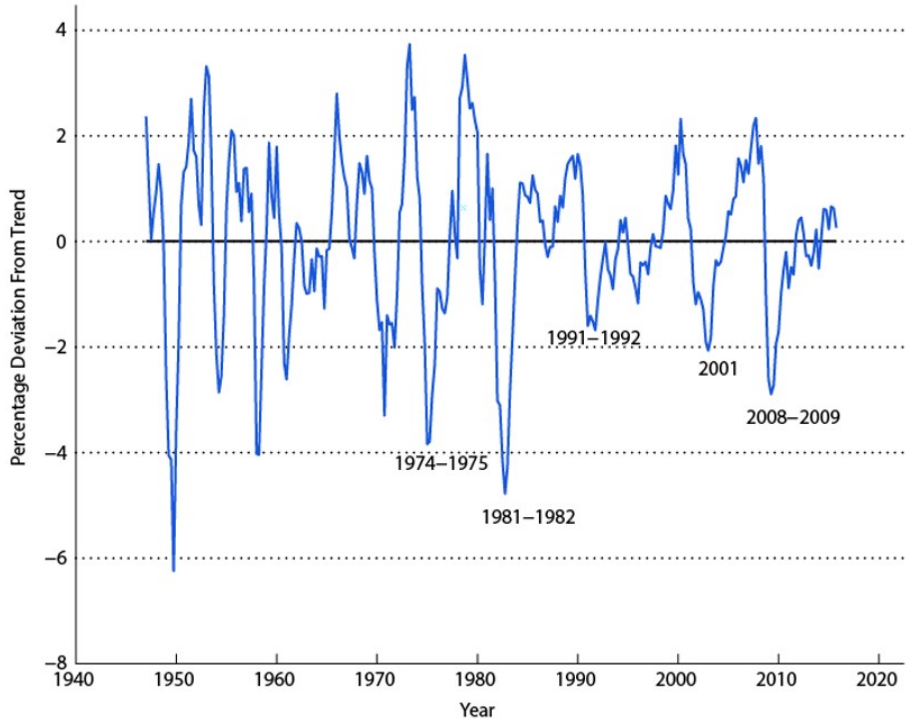


Figure 1.13 Percentage Deviation From Trend in Real GDP

same transform as 1.1, 1.3, 1.4, not per capita



Using Macro Model to Understand Data

- Economics is a scientific pursuit involving the formulation and refinement of theories that can help us better understand how economies work and how they can be improved
- **Data**: how economies work, e.g. GDP example
- **Theory**: cannot do experiment, only way for scientific pursuit
- **Policy**: understand how economies can be improved by policies

Structure of Macro Model: 4 elements

1. **agent**: who is involved?
   - e.g. consumers, firms, governments, etc.
2. **preferences**: how and what is consumed/valued/invested?
   - e.g. consumers' utility function on goods
3. **resources**: availability and distribution
   - e.g. Wealth, time, talents, natural resources
4. **technology**: objective limitation at given period of time
   - firms' production, market structure

Analysis on Macro Model: 3 steps

1. **Equilibrium**: how do all the forces balanced?
   - e.g. competitive equilibrium
2. **Assessment**: what's model prediction, and how different from data?
   - relationship between consumption and output
3. **Refinement**: how do changes in model alter its prediction?
   - different technology, one-period $\rightarrow$ two-period

Just Micro?

Yes! Macro models need micro foundation, because

- aggregate behavior is the sum of individual decisions
- Lucas' critique: structures of economies change w/ policies b/c individual decision changed
- Need to know effect on individual behavior to know the aggregate effect!
- E.g. Two force of COVID stimulus policy:
  1. $\Rightarrow$ workers have less incentive to work $\Rightarrow$ unemployment $\uparrow$ $\Rightarrow$ exacerbate recession
  2. $\Rightarrow$ funding $\uparrow$ $\Rightarrow$ firms have more incentive to hire workers $\Rightarrow$ mitigate recession