

Introduction to Macroeconomics

— Week 1 —

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Summary

- 1 Some useful information about our course
- 2 What is Macroeconomics
- 3 How Macroeconomics studies key questions
- 4 An overview of the book
- 5 Required reading

I – Some useful information

Useful information

- 1 **Lecturer:** Vivaldo Mendes (vivaldo.mendes@iscte.pt)
- 2 **Office:** Room 519 (Building II)
- 3 **Phone numbers:** internal (220372), external (217650518)
- 4 **Attendance hours:** Tuesdays (13.00–14.30h), Thursdays (11.00–12.30h)
- 5 **Course homepage:** <http://mac.de.iscte.pt/>

Grading

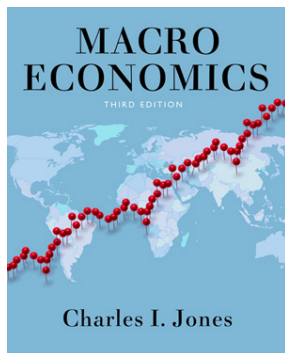
- ① Option A: The grading process includes two major items:
 - ① One mid-term test (weighting 50% of final grade)
 - ② One final test (weighting 50% of final grade)
 - ③ In order to get a positive grade in the course, the mark of the final test cannot be much below 8/20.
- ② Option B: 1 final exam (100%)

Teaching approach

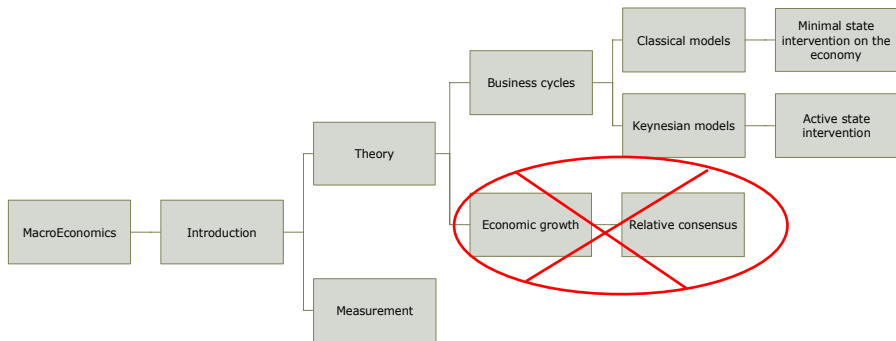
- 1 This is a twelve weeks course
- 2 Every week one chapter will be covered (so 12 chapters covered)
- 3 Every week there are three classes
 - 1 The first two classes will cover theoretical issues
 - 2 The third class is practically oriented (discussing and solving some End_Chapter exercises)
 - 3 In this third class, **students should bring doubts about the material covered on the two previous classes and will be asked to solve exercises.**

The textbook

Charles I. Jones (2014), *Macroeconomics*, 3rd Edition, W. W. Norton, New York.



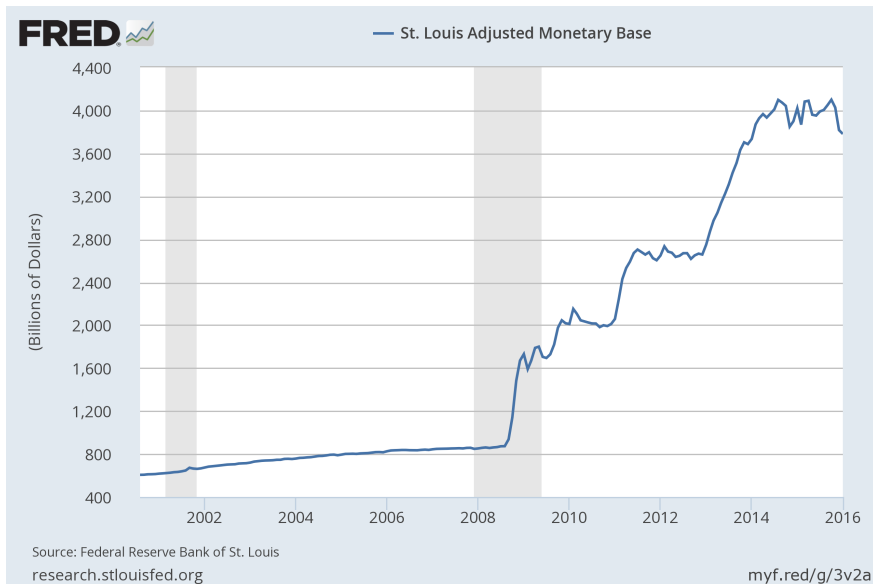
A quick guided tour to macroeconomics



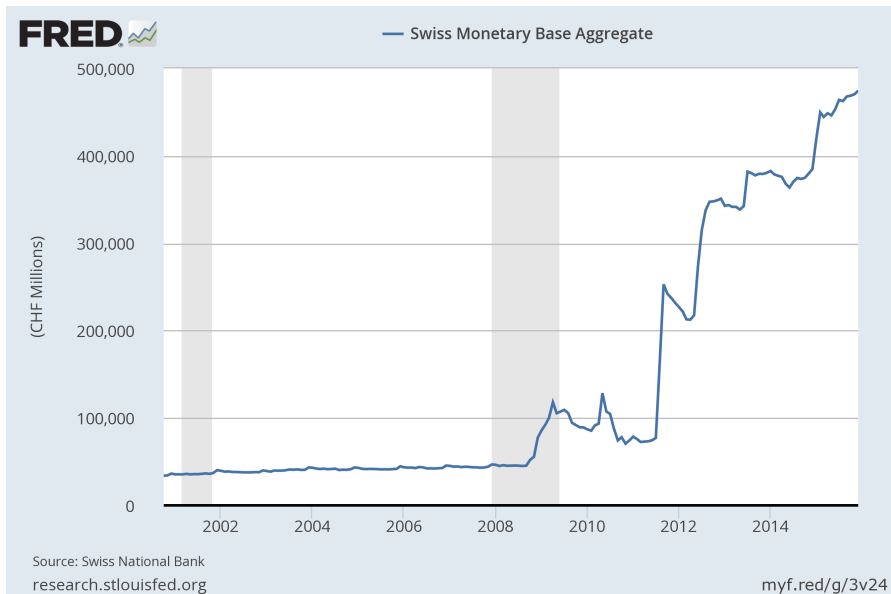
A quick guided tour to current major macro issues

- 1 **Negative interest rates** in many economies with their own currencies
 - 1 Sweden, Switzerland, Denmark, Japan
- 2 **Negative (or close to zero) interest rates** in major economic regions:
 - 1 US, EU, UK
- 3 **Generalized inflation levels below their target levels across countries**
- 4 **Unemployment** as we never saw since the 1930's
- 5 **Quantitative Easing (monetary policy)** taken to a level ... unthinkable ... and exhausted by now.

Monetary Base: QE in US



Monetary Base: QE in Switzerland



II – What is Macroeconomics?

Microeconomics vs Macroeconomics

● Microeconomics

- ▶ Studies how individual agents behave (a household, a firm)
- ▶ Addresses partial equilibria: how prices and quantities are determined in individual markets
- ▶ There are no agents with political power to influence outcomes

● Macroeconomics

- ▶ Studies how aggregate economies behave (all households and all firms, and their interactions in all markets).
- ▶ Addresses general equilibria: how prices and quantities are simultaneously determined in all markets.
- ▶ It includes the political context of economics: Trade unions, Employers associations, etc...

What is macroeconomics?

- Analyses the interactions among **4 aggregate markets**:
 - ▶ Market for goods&services
 - ▶ Money and financial market
 - ▶ Foreign exchange market
 - ▶ Labor market
- Explains how **prices and quantities** are determined in each market in interaction with others
- Considers different **time periods** for the analysis:
 - ▶ Short term: business cycles
 - ▶ Long term: economic growth, sustainability of social security and of public debt, among others

Macroeconomics: the two main schools

- In macroeconomics there are **two opposite ways** of analyzing macro issues
- Keynesian macroeconomics vs Classical macroeconomics
- Why are they different?
- They start from different **crucial assumptions**:
 - ▶ Markets work perfectly well: Classical macroeconomics
 - ▶ Markets show large imperfections: Keynesian macroeconomics
- Perfect markets:
 - ▶ Agents have perfect information (of current situation and what will happen in the future)
 - ▶ Agents make no mistakes in computation or in forecasting
 - ▶ No agent has market power (no monopolies, no price rigidities, no political interference)

Macroeconomics: the two main schools (cont.)

- Different answers about **economic policy**
 - ▶ how and whether the government should intervene in the functioning of the economy in order to increase social welfare
- **Classicals**: Active economic policy is undesirable ... reduces social welfare
- **Keynesians**: Market failures are pervasive and require active public intervention ... to boost social welfare

Major agents in macroeconomics

- Private agents
 - ▶ Households
 - ▶ Firms
 - ▶ Banks (money) and financial institutions (financial assets)
- Agents with a political power
 - ▶ Government
 - ▶ Central Bank (in all OECD countries, this bank is totally independent from the Government)
 - ▶ Trade Unions and Employers Associations
- Foreign agents (agents living in foreign economies)

Important macroeconomic questions to consider

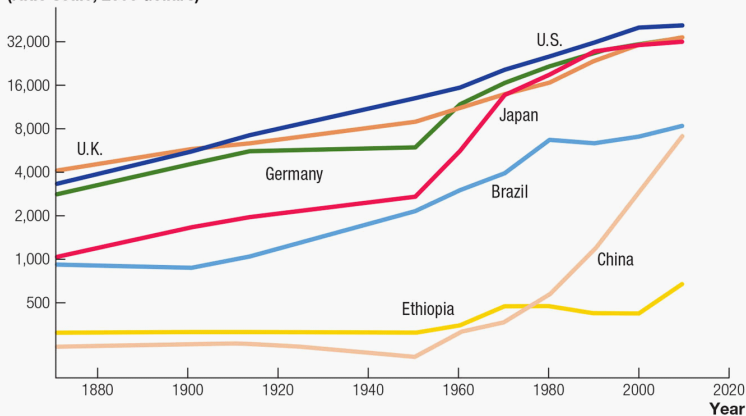
- 1 Why is today's average American
 - 1 more than 10 times richer than 100 years ago?
 - 2 50 times richer than the average Ethiopian?
- 2 Do we understand and know the causes of the recent global financial crisis?
- 3 What role do stock markets play in the economy? What is a "bubble"?
- 4 The unemployment rate: why has unemployment so volatile?
- 5 The inflation rate
- 6 The government: fiscal policy
- 7 The central bank: monetary policy

GDP per capita

FIGURE 1.1

Per Capita GDP in Seven Countries, 1870–2010

Per capita GDP
(ratio scale, 2005 dollars)

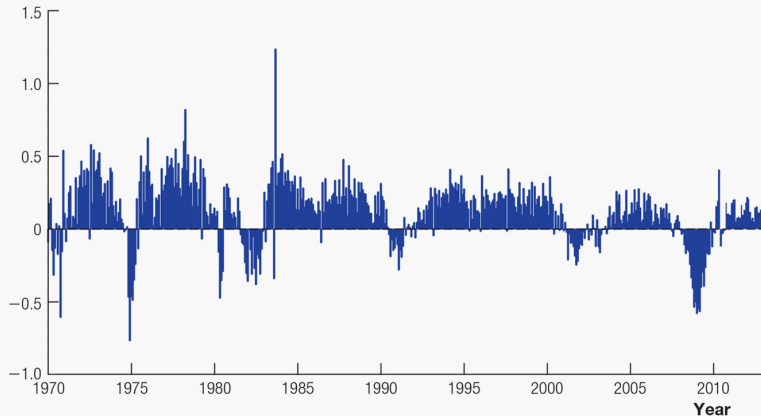


Unemployment

FIGURE 1.2

Changes in U.S. Employment

Monthly change in
employment (percent)



Inflation

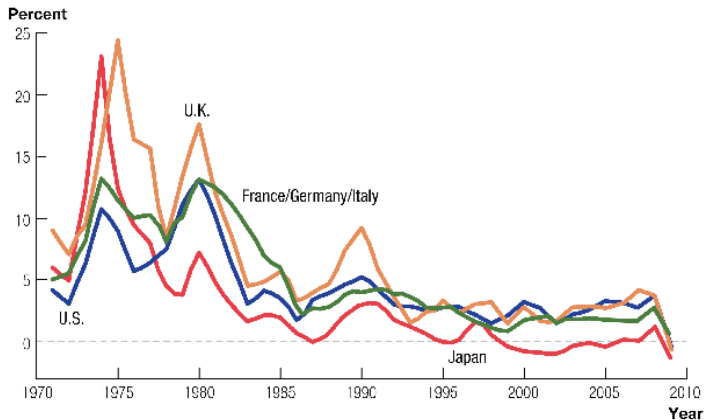


FIGURE 1.3 Inflation Rates in Certain Rich Countries, 1970–2009

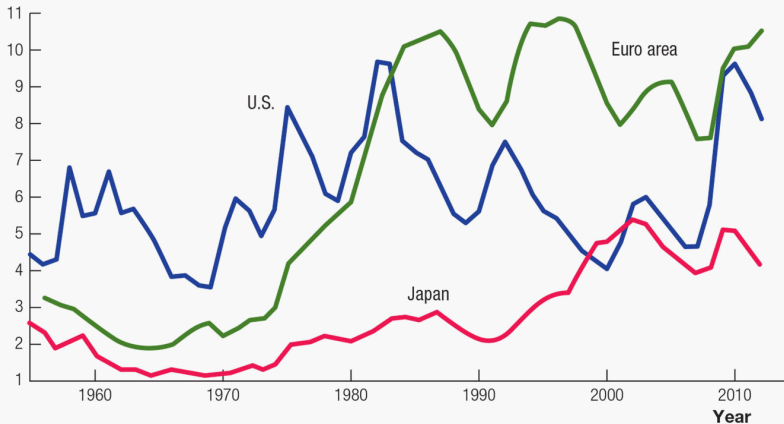
Macroeconomics, 2nd Ed
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Unemployment in US, EU and Japan

FIGURE 1.4

The Unemployment Rate in the United States, Europe, Japan

Percent

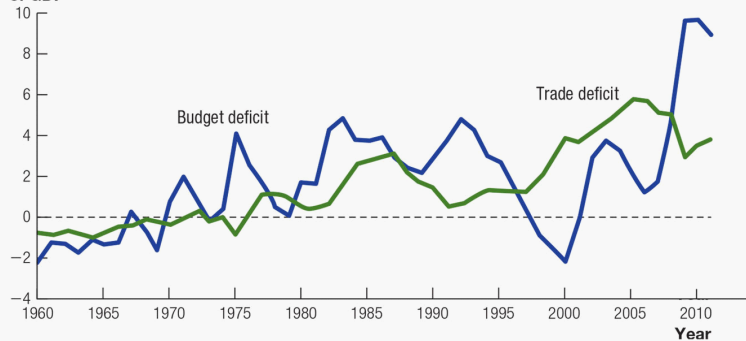


Budget and Trade deficits

FIGURE 1.5

Budget and Trade Deficits in the United States

Percent
of GDP



III – How Macroeconomics Studies Key Questions

A general approach

- 1 Macroeconomists have a general approach to study questions of interest:
 - 1 Document the facts
 - 2 Develop a model
 - 3 Compare predictions of the model with original facts
 - 4 Use the model to make other predictions that will eventually be tested

The need for simplicity

- A modern market economy is a hugely **complex structure**
- There are thousands of firms, millions of households, thousands of goods and prices, there is a government, a central bank, trade unions and employers associations, a foreign sector
- All this occurs in 4 major markets in permanent interaction
- Agents are rational and try to anticipate the future (they formulate expectations)
 - ▶ Self-fulfilling expectations (in the good and the bad sense)
 - ▶ Herding behavior (euphoria and panic)
- It is totally impossible to include all this complexity in a single economic model
- So, any macroeconomic model is necessarily an **abstract simplification** of economic reality

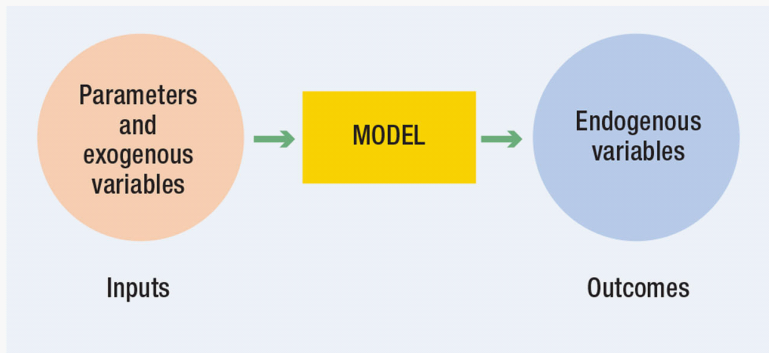
Simplicity, but ... do not transform reality

- Despite being necessarily an **abstract simplification** of economic reality
- Models should not omit **defining features** of that reality ... for the sake of simplicity, e.g.:
 - ▶ *if prices are sticky, it looks questionable to assume that they are perfectly flexible in the model*
 - ▶ *if agents make mistakes when forecasting the future, it's no good to assume in the model that expectations are always fulfilled*
 - ▶ *if there are agents which have market power, it looks bad if the model ignores that important feature*
- What makes a good model? Good assumptions and good predictions ... and simplicity

The structure of economic models

FIGURE 1.6

The Structure of Economic Models



Parts of an economic model

1 Parameters

- 1 an input that is constant over time, except when the model builder changes it for an experiment.

2 Exogenous variables

- 1 an input that can change over time, but determined by someone outside the economy
- 2 exogenous = “outside of the model”

3 Endogenous variables

- 1 an outcome of the model—something that is explained by the model.
- 2 endogenous = “within the model”

IV – An overview of the book: long run vs short run behavior

Growth rates: basics

- Assume the following problem:
 - ▶ I have 10€ today
 - ▶ I receive an interest of 4% per year on them
 - ▶ How much are they worth off in t years time?
- Mathematically speaking:

$$y_1 = y_0(1 + g) \tag{1}$$

$$y_2 = y_1(1 + g) = y_0(1 + g)(1 + g) = y_0(1 + g)^2$$

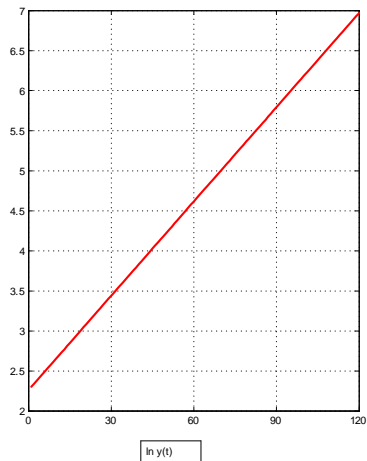
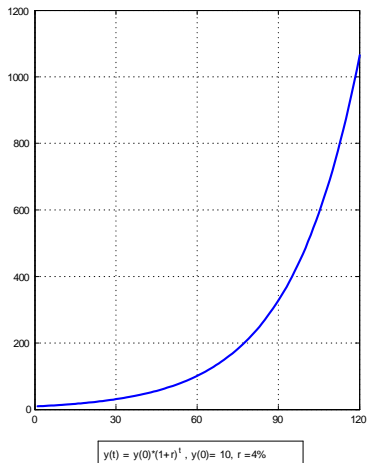
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$$y_t = y_0(1 + g)^t \tag{2}$$

Exponential growth and its log face: $g = 4\%$, $y(0) = 10$



Exponential growth and its log face (cont.)

- When we have exponential growth, this can be **linearized** just by applying natural logs
- Logs are applied everywhere in macro ... makes life a lot easier
- Apply logs to equation (1), and get

$$\ln y_1 = \ln y_0 + 1 \times \ln(1 + g)$$

- As $\ln(1 + g) \approx g$ for small values of g (try it with your calculator for $-1 < g < 1$), then

$$\ln y_1 - \ln y_0 \approx g$$

- What about **average** growth rates? Apply logs to equation (2) and

$$\ln y_t = \ln y_0 + t \times \ln(1 + g)$$

or

$$\frac{\ln y_t - \ln y_0}{t} \approx g$$

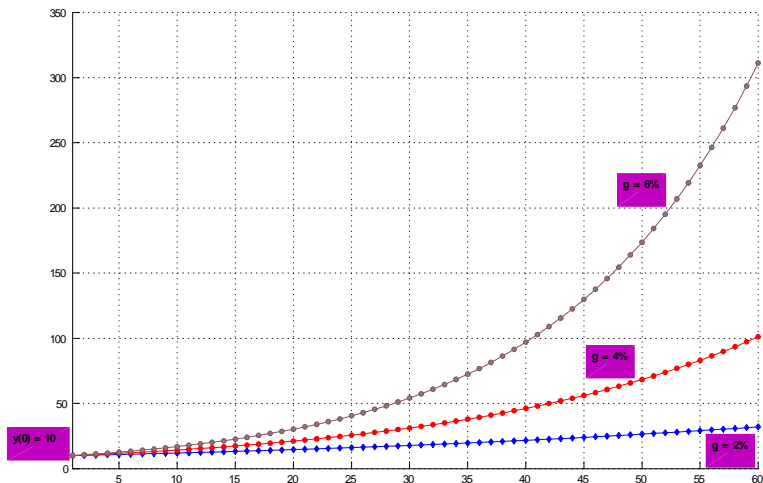
The importance of sustainable growth

- Assume 3 economies (A,B,C) all starting at $t(0)$ with an income per capita of 10€
- What happens to their income per capita in **60 years**, if the annual growth rates of their income per capita are as follows:

$$g(A) = 2\%, \quad g(B) = 4\%, \quad g(C) = 6\%$$

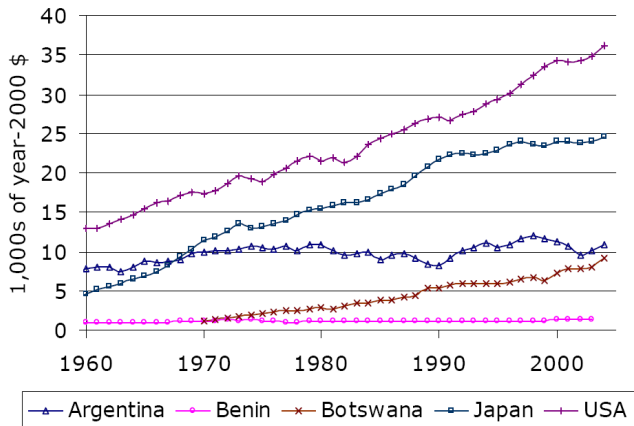
- Do the calculations, and look at the next figure
- Growth **miracles** and growth **disasters**: no mere rhetoric ... look at a figure and compare
 - ▶ Argentina with Japan
 - ▶ Botswana and Benin

The importance of sustainable growth (cont.)



Growth miracles and growth disasters

Real Output per capita, 1960-2004



Source: Penn-World Tables, chain-weighted data.

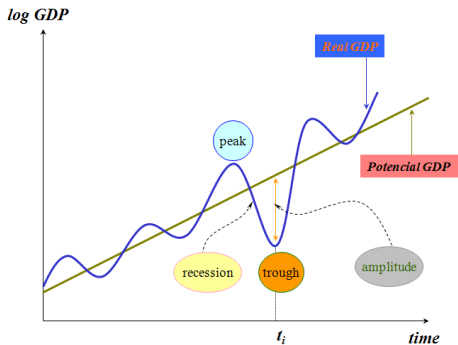
Long term trends and short term cycles

- The **trend**: the tendency that the economy displays over the long term, when the economy is working under "normal" conditions
- "**Normal**" **conditions**: no positive or negative shocks affect the economy and so markets are working at their **potential equilibrium** levels
- **Business cycles**: the short term variations of the economy around its long term trend
 - ▶ If variables are expressed in logs, then business cycles are expressed as **percentage deviations from the long term trend**

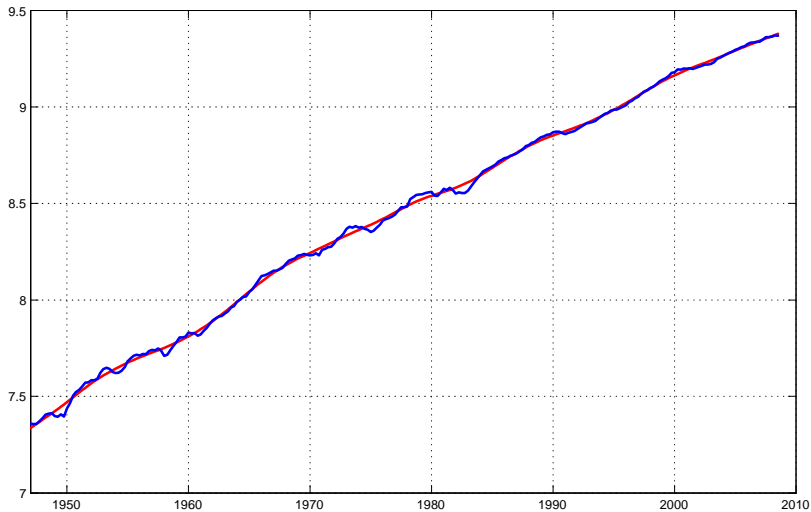
Business cycles: a figure

Definition

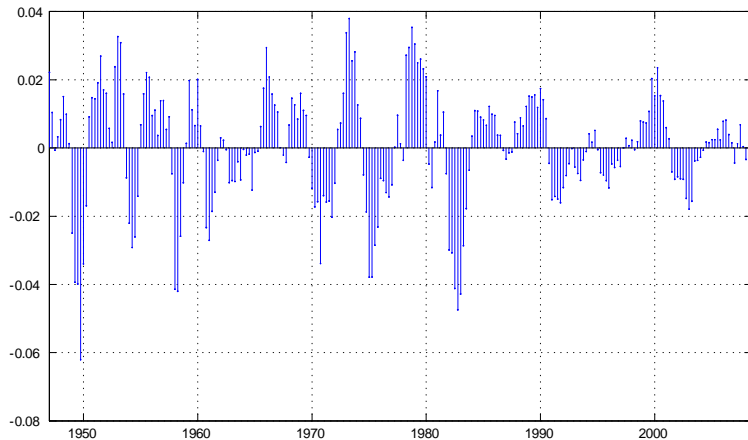
Business cycles are the recurrent short-run movements around a smooth long-run trend in endogenous economic variables, like production, investment, consumption, employment, price level, real wage, average labor productivity, money supply, among others.



Business cycles: GDP and its trend (USA)



Business cycles: GDP and its percentage deviations (USA)



Business cycles: crucial point

- How is the potential equilibrium levels determined **empirically**?
- Very controversial: no objective way to obtain the long term trend
- So we have to resort to statistical techniques to estimate it
- The most applied tool is a technique called the "Hodrick-Prescott filter" (do not worry about it in this course)
- However, this technique is subject to serious reservations
- Widely used: even the European Commission uses the HP filter to obtain potential GDP levels in order to obtain the level of structural budget deficits

V – Required readings

Required reading



Charles I. Jones (2014). *Macroeconomics*, Third Edition, W. W. Norton & Company. **Read Chapter 1.**