

# Lecture 1: What is Macroeconomics?

## Intermediate Macroeconomics, Econ 102

François Geerolf

UCLA

April 2, 2018

# What is macroeconomics?

- What is macroeconomics? Macroeconomics is a subject of study interested with providing an answer to the following (ambitious) questions:
  - ① Why do production and employment fluctuate? What are the causes of business cycles? Should the government try to do something about them? If so, what?
  - ② How much public debt is too much? Is the US on an unsustainable path for public debt? How about other countries? More generally, is thrift a good thing?
  - ③ You may be aware that Donald Trump is worried about the US trade deficit (if you are unsure about what a trade deficit is, do not panick – we will learn that too !) Are they a problem? What causes trade deficits? How can they be alleviated?
  - ④ What was the cause of the US 2007-2009 financial crisis? How did the government respond? Why did macroeconomists disagree on the appropriate policy response: Supply-side (neoclassical) or demand-side (keynesian) economics.

# Outline

## 1 The class

- General observations
- Tentative (Preliminary) Schedule

## 2 A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## 3 A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

## 1 The class

- General observations
- Tentative (Preliminary) Schedule

## 2 A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## 3 A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

## 1 The class

- General observations
- Tentative (Preliminary) Schedule

## 2 A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## 3 A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

## Change of textbook / class

- Importantly: I have changed the design of the class completely. It used to be based on Chad Jones' *Macroeconomics* textbook. Now it will be based on Olivier Blanchard's *Macroeconomics* textbook. (Blanchard (2016))
- Olivier Blanchard is both a first rate academic as much as a first rate policymaker. He was the Chief Economist of the IMF from 2008 to 2015.
- It will be much less math based, and much more concept based, than the course I taught previously.
- Thus, the material from the 102 class I taught in the past is largely irrelevant. I will sometimes deviate somewhat from the Blanchard textbook.
- The moodle website for the class is: <https://moodle2.sscnet.ucla.edu/course/view/18S-ECON102-1>.

## Teaching “philosophy”

- Some of the questions that I mentioned at the outset are very politically charged.
- One main reason is that there is a large amount of scientific disagreement among macroeconomists. Another is that macroeconomic policy sometimes has redistributive effects: monetary policy, fiscal policy, exchange rate policy.
- But the importance of the questions is what makes macroeconomics interesting and very relevant to understand present day issues. These questions are discussed every day in one way or another, in the *New York Times*, the *Wall Street Journal*, by politicians, bloggers, journalists, commentators and pundits around the world.
- In this class, I aim not to give you a set of answers, but rather a set of tools which will allow you to understand these debates better. “The purpose of studying economics is not to acquire a set of ready-made answers to economic questions, but to learn how to avoid being deceived by economists.” (Joan Robinson (1903-1983))

## Teaching “philosophy” (cont’d)

- The class name is Macroeconomic Theory. This reflects largely the past state of macroeconomics which was mostly based on theory: classical, ricardian, keynesian, neo-classical, neo-keynesian, etc. However, economists are increasingly turning to data in order to answer these questions.
- Unfortunately, Econometrics (Econ 103) is not a prerequisite for this class, so that you do not yet have all the tools to understand empirical macroeconomics.
- However, I will try, as much as possible, to base my class on facts rather than theories. Ultimately, this is what economics science should be about, and that is increasingly what it is in modern research.
- The Blanchard textbook also emphasizes facts, downloading data. For those who are interested in Data Science, and for exploring macroeconomic data more, I will provide some code written in R Statistical Software on the following website:  
<https://github.com/fgeerolf/econ-102>.

## Exams?

- The midterm exam will take place during **Week 5** on **April 30, 2018** about the short-run, the medium-run. The final exam will be comprehensive and shall take place on **June 14, 2018**.
- The material on the slides will be a main source for exams.
- Everything that is discussed in class is examinable. I encourage you to take notes during the class. To do well in this class it is necessary that you attend all lectures / recitation sections. Looking at the slides is not enough. If you need to miss a lecture or a recitation, then you are responsible for making up with the corresponding material.
- Material in recitation sections is examinable.
- Compulsory readings are examinable.

## 1 The class

- General observations
- Tentative (Preliminary) Schedule

## 2 A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## 3 A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

# Schedule 1/3

Date	Topics / Review sessions	Readings
	<b>Math refresher / Intro to Econometrics</b>	App 2
April 2, 2018	1 - What is Macroeconomics	Ch 1-2 App 3
April 4, 2018	2 - The Goods Market	Ch 3
	<b>An introduction to the NIPA</b>	App 1
April 9, 2018	3 - Financial Markets	Ch 4
April 11, 2018	4 - Goods and Financial Markets: the IS-LM Model	Ch 5
	<b>Multipliers</b>	
April 16, 2018	5 - Financial Markets, Aggregate Demand and the Crisis	Ch 6
April 18, 2018	6 - The Labor Market	Ch 7
	<b>The Phillips Curve</b>	
April 23, 2018	7 - The Phillips Curve and Inflation	Ch 8
April 25, 2018	8 - The IS-LM PC Model	Ch 9

# Schedule 2/3

Date	Topics / Review sessions	Readings
	<b>Convergence in the data</b>	
<b>April 30, 2018</b>	<b>Midterm Exam: The Short Run (8 classes)</b>	
May 2, 2018	9 - The Facts of Growth	Ch 10
	<b>Midterm 1 Review Session</b>	
May 7, 2018	10 - Saving, Capital Accumulation and Output	Ch 11
May 9, 2018	11 - Technological Progress	Ch 12-13
	<b>Technological progress</b>	
May 14, 2018	12 - Expectations	Ch 14-15-16
May 16, 2018	13 - Openness in Goods and Financial Markets	Ch 17

## Schedule 3/3

Date	Topics / Review sessions	Readings
	<b>Exchange rates around the world</b>	
May 21, 2018	14 - The Goods Market in an Open Economy	Ch 18
May 23, 2018	15 - Output, the Interest Rate, and the Exchange Rate	Ch 19
	<b>Trade deficits and competitiveness</b>	
May 28, 2018	Memorial Day	
May 30, 2018	16 - Exchange Rate Regimes	Ch 20
	<b>Exchange rate crises</b>	
June 4, 2018	17 - Fiscal Policy	Ch 21-22
June 6, 2018	18 - Monetary Policy: A Summing up	Ch 23
June 14, 2018	<b>Comprehensive Final Exam (3pm - 6pm)</b>	

- Questions?

## 1 The class

- General observations
- Tentative (Preliminary) Schedule

## 2 A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## 3 A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

# Macroeconomics by geography

- Rather than trying to define in the abstract what macroeconomics is, the best way is perhaps to bring you on an economic tour of the world.
- First, we will discuss the 2007-2009 financial crisis a first time, very quickly – but we shall take up these issues during Lecture 5 (corresponding to Chapter 6).
- Second, we shall then look at the macroeconomics of three regions in turn:
  - ① The United States
  - ② The Euro Area
  - ③ China

## 1 The class

- General observations
- Tentative (Preliminary) Schedule

## 2 A Tour of the World

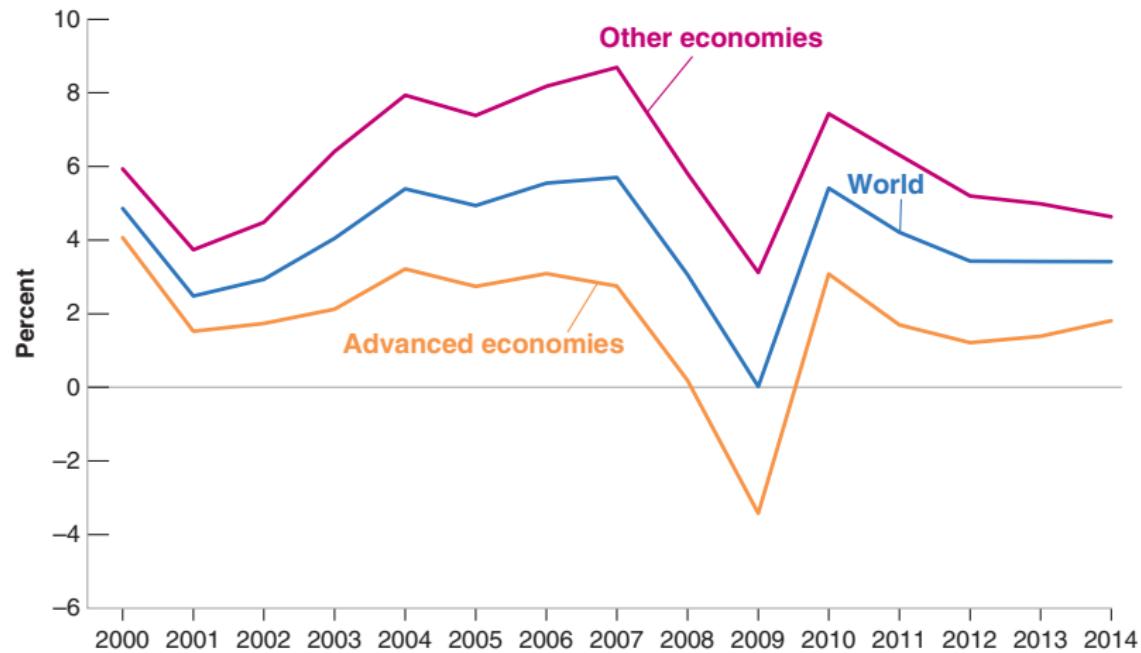
- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## 3 A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

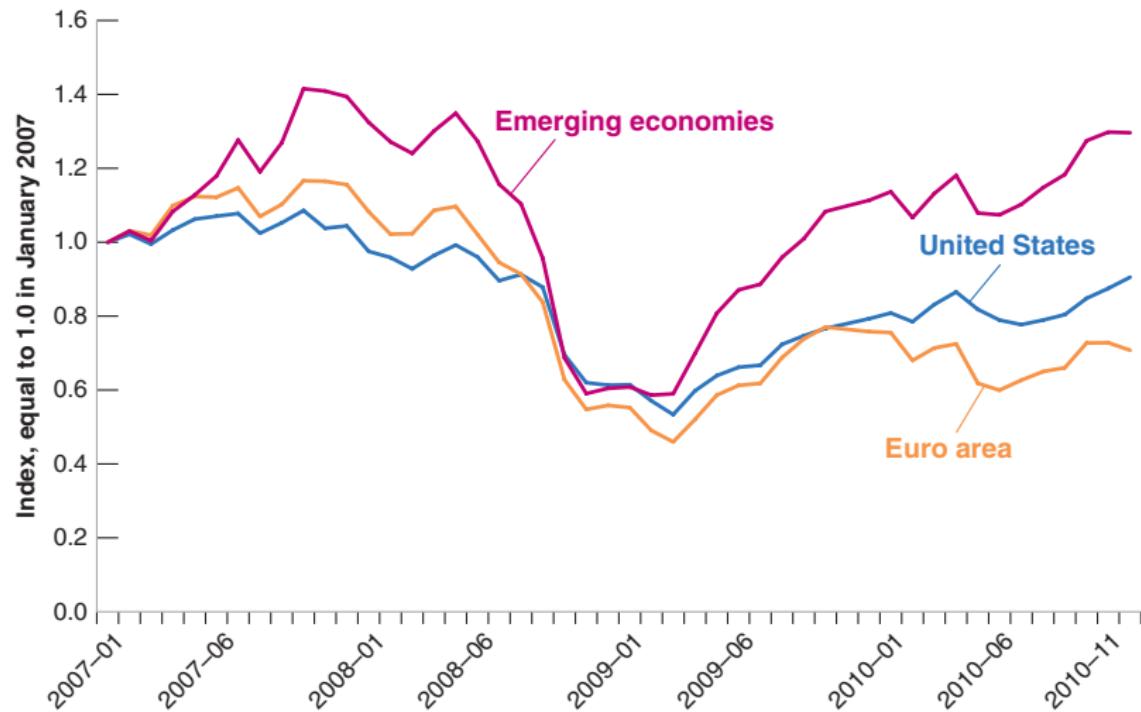
# Output Growth Rates

Output Growth Rates for the World Economy, for Advanced Economies, and for Emerging and Developing Economies, 2000–2014

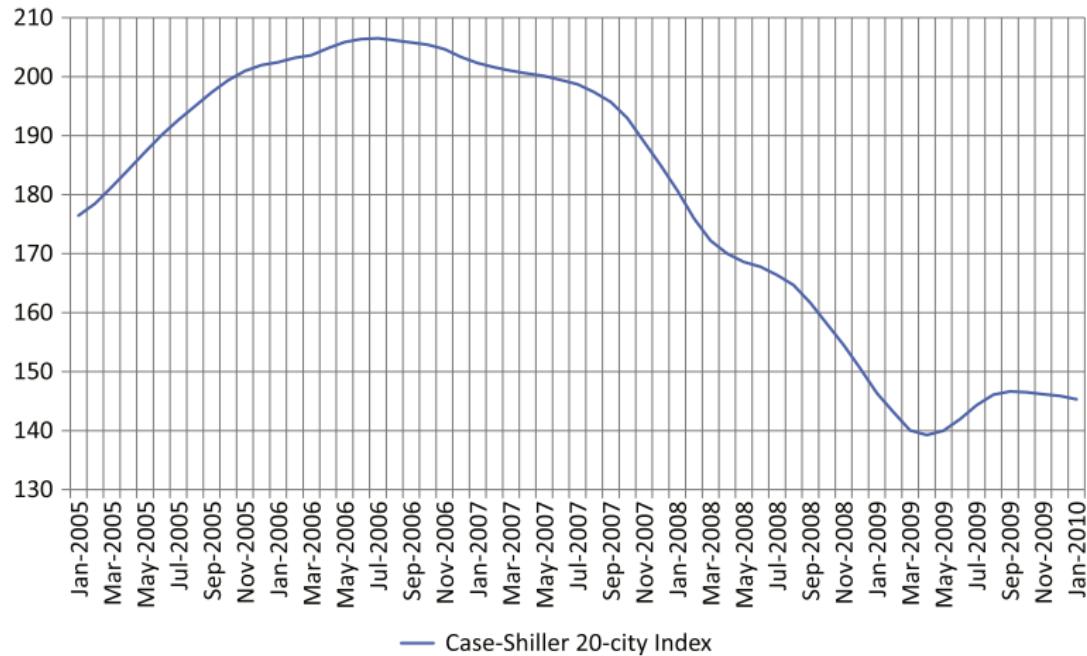


# Stock Prices

Stock prices in the United States, the Euro area, and emerging economies,  
2007–2010



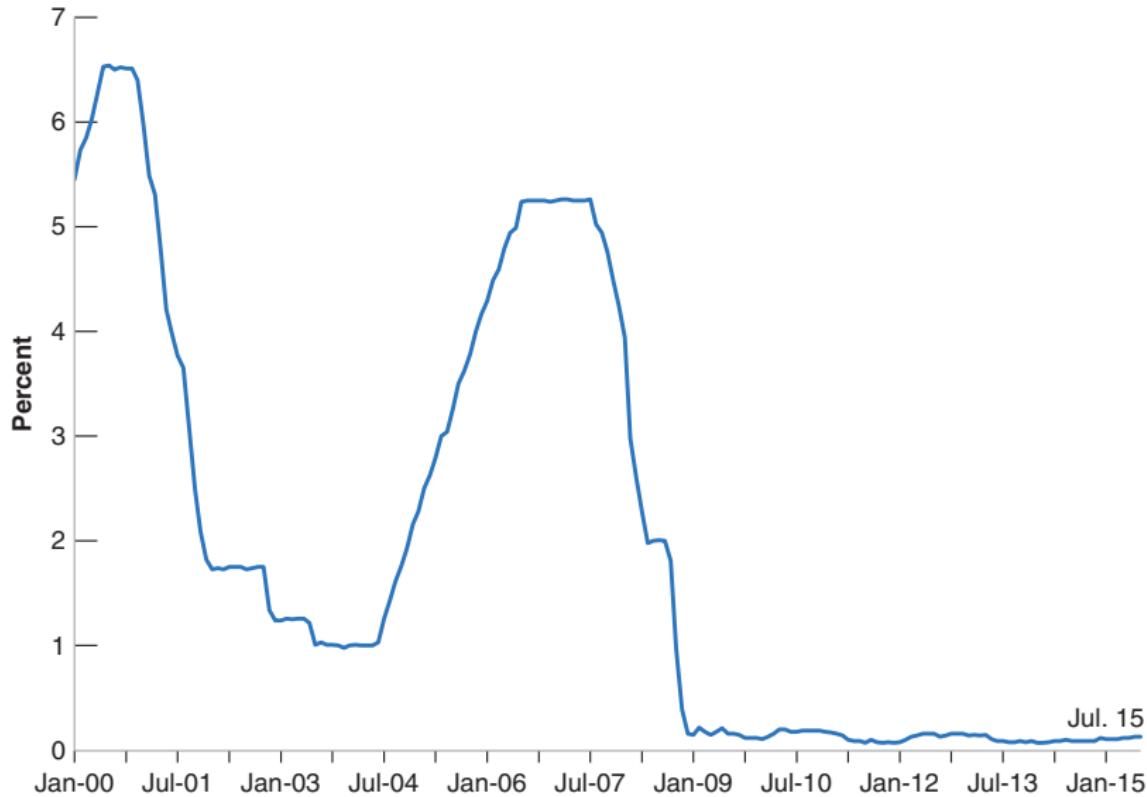
# Early warning sign (Guerrieri and Uhlig (2016))



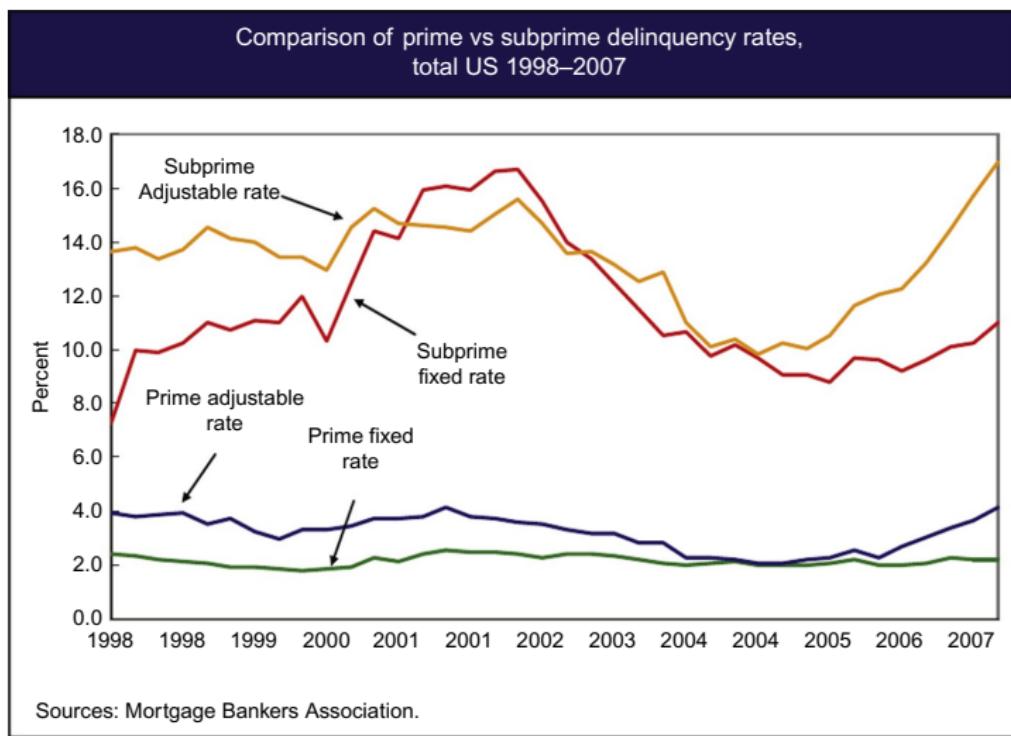
## The Crisis

- 2000-2007: sustained expansion in the world economy. But in the summer of 2006: house prices reach a plateau (see previous slide).
- If you want to know how the financial crisis all started, the story of people who saw it coming, I strongly advise you to read Michael Lewis' *The Big Short: Inside the Doomsday Machine*, or the movie directed by Adam McKay. [Link](#)
- Christian Bale plays Michael Burry, who spoke at the 2012 UCLA Economics Commencement. His speech is available here: [Link](#)
- In particular, the role of Adjustable Rate Mortgages was paramount. We will see later that the Federal Reserve sets monetary policy, and that the rise in short-term interest rates from 2004 to 2006 was key in triggering a series of delinquencies. During Class 5, we shall come back to these issues.

# Fed Funds Rate



# Prime and Subprime Adjustable Rate (Guerrieri and Uhlig (2016))

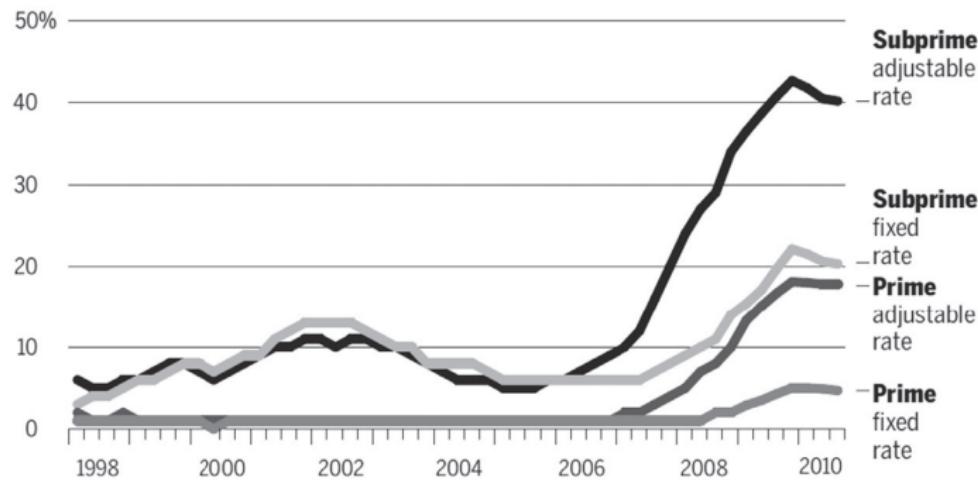


# Mortgage Delinquencies (The Financial Crisis Inquiry Commission (2011))

## Mortgage Delinquencies by Loan Type

*Serious delinquencies started earlier and were substantially higher among subprime adjustable-rate loans, compared with other loan types.*

In percent, by type



Note: Serious delinquencies include mortgages 90 days or more past due and those in foreclosure.

Source: Mortgage Bankers Association National Delinquency Survey

## ① The class

- General observations
- Tentative (Preliminary) Schedule

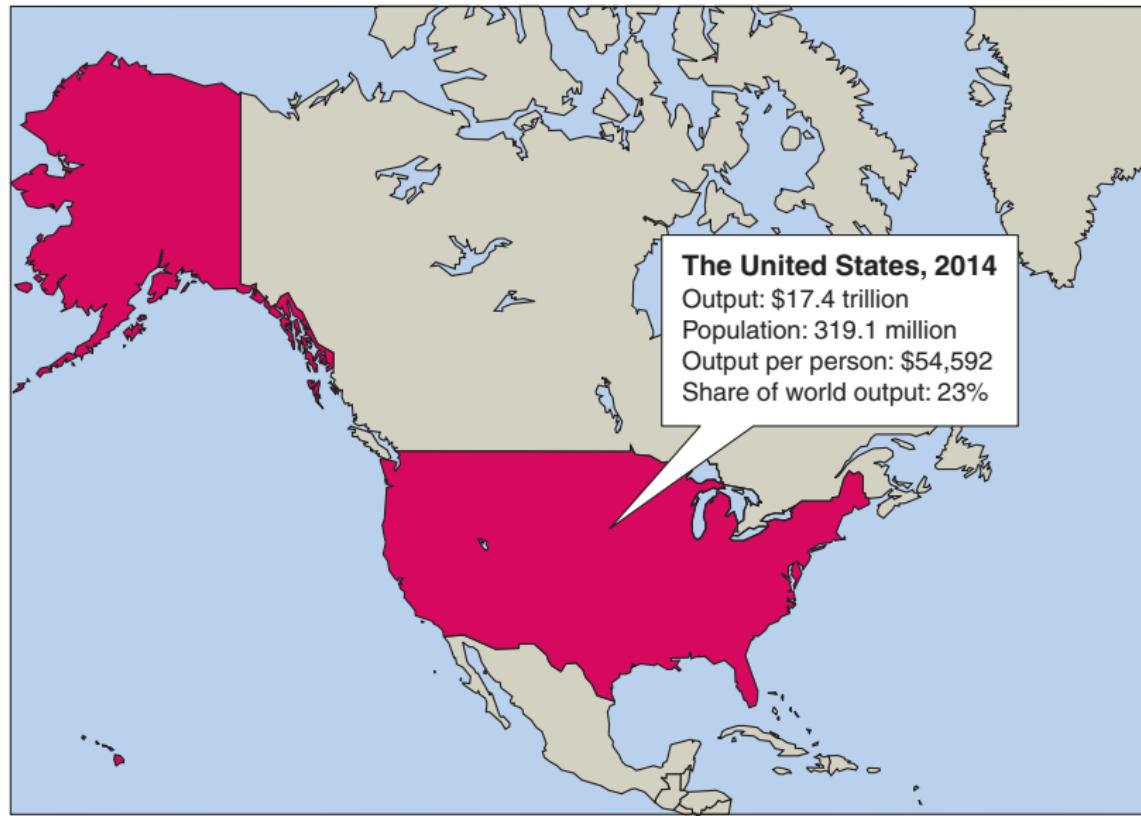
## ② A Tour of the World

- The 2007-2009 US / world Financial Crisis
- **The United States**
- The Euro Area
- China

## ③ A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

# Basic Numbers



## Basic Facts

- 23% of world output.
- Output in 2014: \$17.4 trillion.
- Population in 2014: 319.1 million.
- Output per person: \$54,592
- Worrying trend: low labor productivity growth.

# Growth

**Table 1-1** Growth, Unemployment, and Inflation in the United States, 1990–2015

Percent	1990–2007 (average)	2008–2009 (average)	2010–2014 (average)	2015
<b>Output growth rate</b>	3.0	-1.5	2.2	2.5
<b>Unemployment rate</b>	5.4	7.5	8.0	5.4
<b>Inflation rate</b>	2.3	1.4	1.6	0.7
Output growth rate: annual rate of growth of output (GDP). Unemployment rate: average over the year. Inflation rate: annual rate of change of the price level (GDP deflator).				
Source: IMF, <i>World Economic Outlook</i> , July 2015.				

**Table 1-2** Labor Productivity Growth, by Decade

Percent change; year on year (average)	1990s	2000s	2010–2014
<b>Nonfarm Business Sector</b>	2.0	2.6	1.2
<b>Business Sector</b>	2.1	2.6	1.2
<b>Manufacturing</b>	4.0	3.1	2.4
Source: Haver Analytics.			

## ① The class

- General observations
- Tentative (Preliminary) Schedule

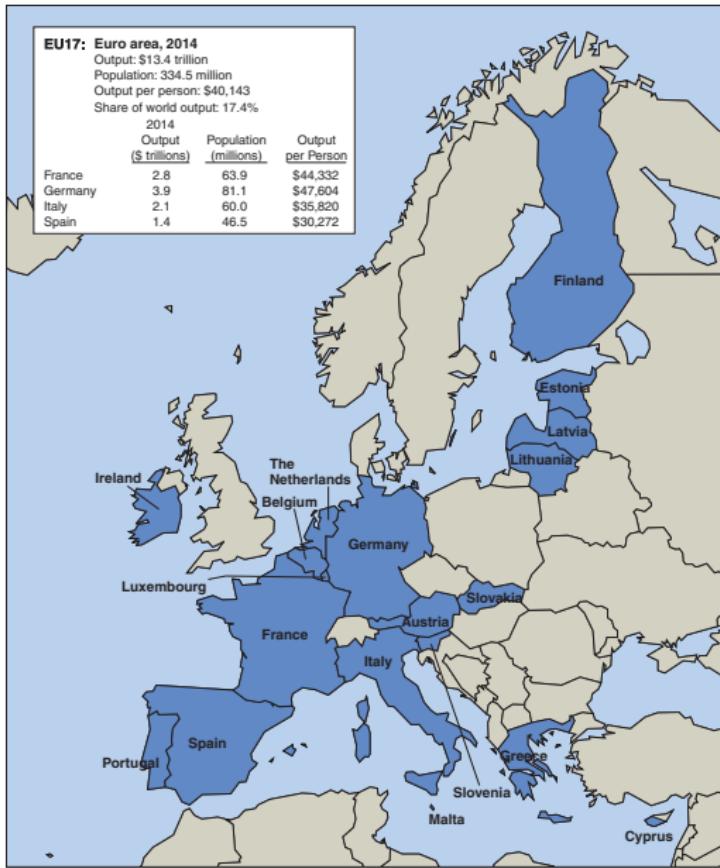
## ② A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- **The Euro Area**
- China

## ③ A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

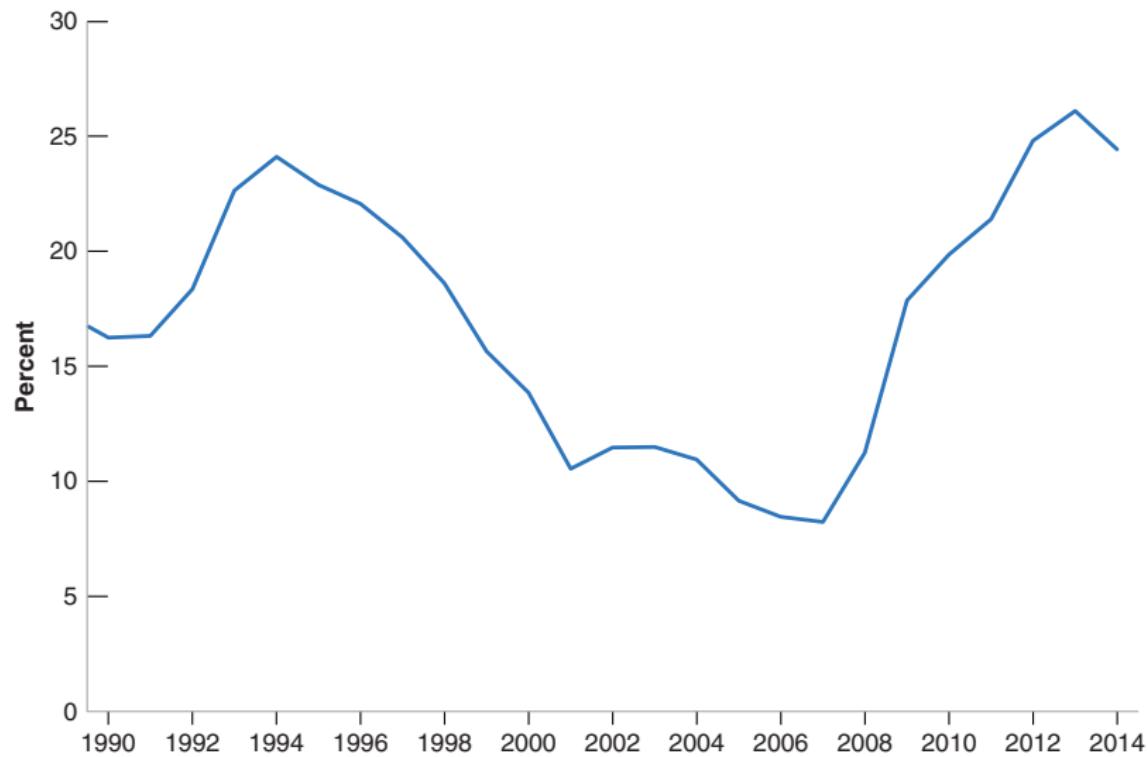
# Euro Area



## Basic Facts

- 1957: 6 European countries decide to form a common European market.
- Since then: 22 more countries have joined ( $\Rightarrow$  EU28)
- 1999: creation of the Euro
- Worrying issues for Europe:
  - ▶ High unemployment. Large divergence across countries (5% in Germany, versus 23% in Spain in 2015).
  - ▶ Monetary Policy is not independent. It fits some countries, not others.
  - ▶ It's much harder to regain competitiveness by internal devaluation (deflation) than by depreciating one's currency. (we will discuss these issues more later)

# Spanish Unemployment



# Growth

**Table 1-3** Growth, Unemployment, and Inflation in the Euro Area, 1990–2015

Percent	1990–2007 (average)	2008–2009 (average)	2010–2014 (average)	2015
<b>Output growth rate</b>	2.1	–2.0	0.7	1.5
<b>Unemployment rate</b>	9.4	8.6	11.1	11.1
<b>Inflation rate</b>	2.1	1.5	1.0	1.1

Output growth rate: annual rate of growth of output (GDP). Unemployment rate: average over the year.  
Inflation rate: annual rate of change of the price level (GDP deflator).

Source: IMF, *World Economic Outlook*, July 2015.

## 1 The class

- General observations
- Tentative (Preliminary) Schedule

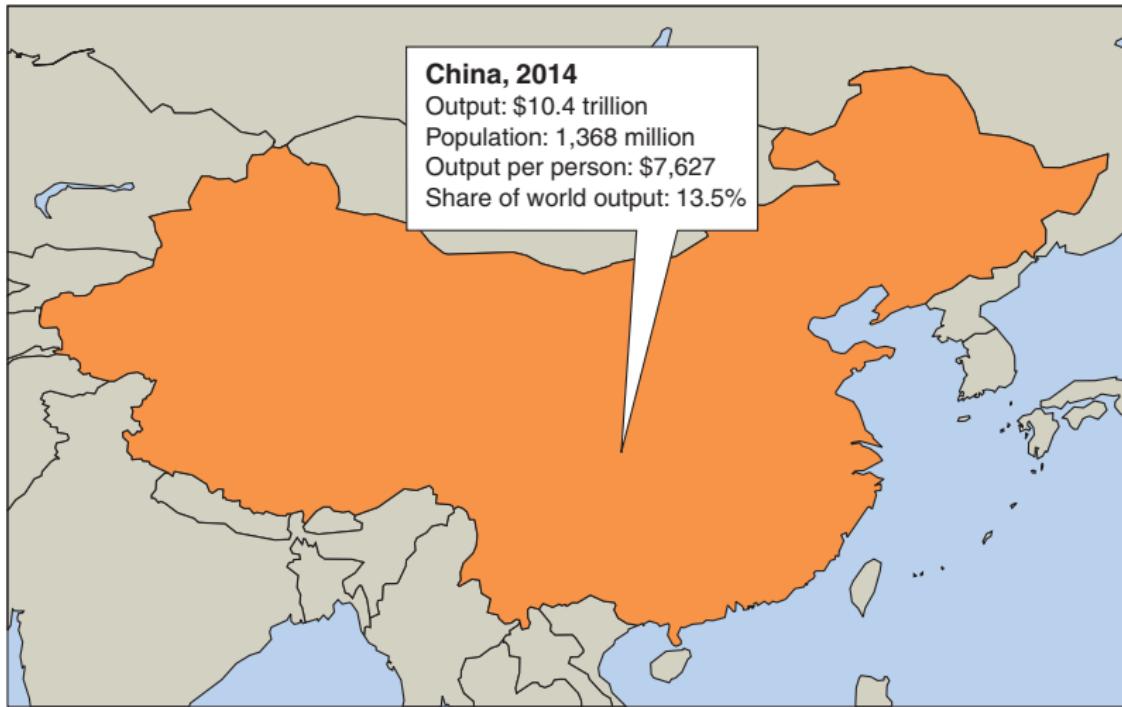
## 2 A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## 3 A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

# Basic Numbers



## China

- Output per person is only \$7,627, using the dollar-yuan exchange rate.
- This is roughly 15% of output per person in the United States.
- However: be careful ! If you have ever traveled in foreign countries, you may know that life is cheaper in developing countries, more particularly the price of what economists call “non tradables” (such as restaurants, haircuts, real estate, etc.) This is even true inside the US: life is more expensive in NYC and in LA than in Atlanta or Detroit, so that one needs to be careful when comparing “standards of living”.
- Leads to the concept of PPP (for Purchasing Power Parity) measures. Using a PPP measure, output per person in China is more \$12,100.

# Growth

**Table 1-4** Growth, Unemployment, and Inflation in China, 1990–2015

Percent	1990–2007 (average)	2008–2009 (average)	2010–2014 (average)	2015
<b>Output growth rate</b>	10.2	9.4	8.6	6.8
<b>Unemployment rate</b>	3.3	4.3	4.1	4.1
<b>Inflation rate</b>	5.9	3.7	4.2	1.2

Output growth rate: annual rate of growth of output (GDP). Unemployment rate: average over the year.  
Inflation rate: annual rate of change of the price level (GDP deflator).

Source: IMF, *World Economic Outlook*, July 2015.

## 1 The class

- General observations
- Tentative (Preliminary) Schedule

## 2 A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## 3 A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

## 1 The class

- General observations
- Tentative (Preliminary) Schedule

## 2 A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## 3 A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

## Measurement

- Economists studying economic activity during the Great Depression, such as John Maynard Keynes, had no measure of aggregate (total) activity.
- Simon Kuznets, from Harvard University famously put together the first National Income and Product Accounts (NIPA) at the end of WWII.
- Aggregate output = gross domestic output (GDP).
- GDP is the value of the final goods and services produced in the economy during a given period.
- GDP is also the sum of value added in the economy during a given period.
- GDP is the sum of incomes in the economy during a given period.

## Example

Steel Company (Firm 1)		Car Company (Firm 2)	
Revenues from sales	\$100	Revenues from sales	\$200
Expenses		Expenses	\$170
Wages	\$80	Wages	\$70
		Steel purchases	\$100
Profit	\$20	Profit	\$30

### Steel and Car Company

Revenues from sales	\$200
Expenses (wages)	\$150
Profit	\$50

## Comments

- Do not double count ! Some goods are intermediate goods, they are not counted twice.
- Production side: \$200 is produced.
- Income side: \$150 go to wages, \$50 go to profits.
- These are two sides of the same coin. The implicit assumption in this economy is that everyone only buys cars, including capitalists who earn profits. We shall discuss this more later.

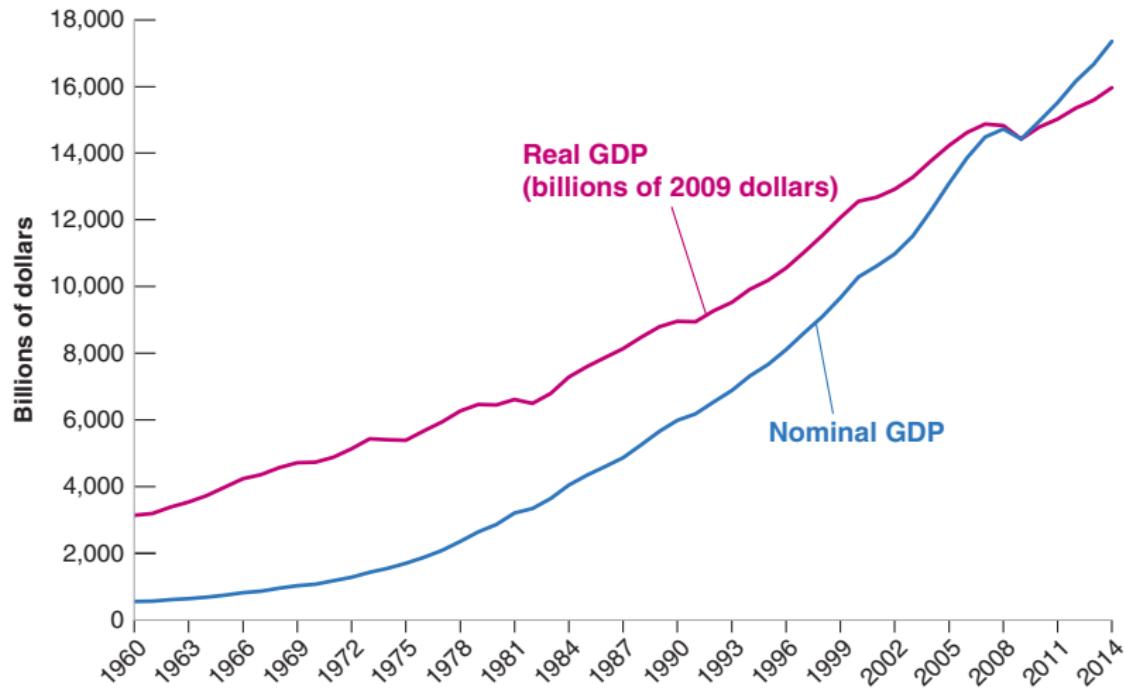
## Nominal and Real GDP

- US GDP was \$17.4 trillion in 2014, compared to \$543 billion in 1960. Was US output really 32 times higher in 2014 than in 1960? No, some of this reflects an increase in the price of goods (inflation).

Year	Quantity of Cars	Price of Cars	Nominal GDP	Real GDP (in 2009 dollars)
2008	10	\$20,000	\$200,000	\$240,000
2009	12	\$24,000	\$288,000	\$288,000
2010	13	\$26,000	\$338,000	\$312,000

- Nominal GDP = dollar GDP or GDP in current dollars.
- Real GDP = GDP in terms of goods, GDP in constant dollars, GDP adjusted for inflation.

# Nominal and Real GDP in the US

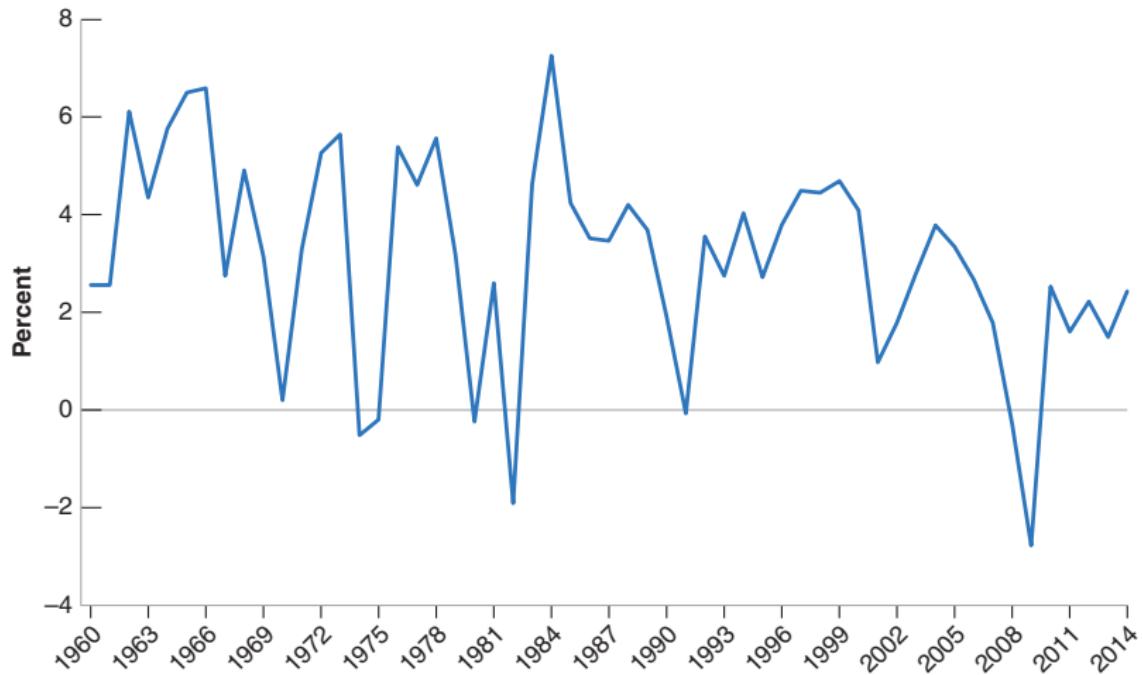


## GDP levels and growth rates

- So far we have been looking at GDP levels. However, in assessing macroeconomic performance of an economy from year to year, economists often focus on the rate of growth of real GDP, often called just GDP growth:
  - ▶ Periods of positive GDP growth are called **expansions**.
  - ▶ Periods of negative GDP growth are called **recessions**.
- GDP growth in year  $t$  is constructed as a function of GDP at year  $t$  ( $Y_t$ ) as follows:

$$\text{growthGDP} = \frac{Y_t - Y_{t-1}}{Y_{t-1}}$$

# Growth Rate of U.S. GDP 1960-2014



## ① The class

- General observations
- Tentative (Preliminary) Schedule

## ② A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## ③ A Tour of the Main Themes

- Aggregate Output
- **The Unemployment Rate**
- The Short Run, the Medium Run, and the Long Run

## Unemployment

- GDP is important, as this is a measure of aggregate economic activity, but the unemployment rate is also a very important concept for macroeconomics.
- The labor force ( $L$ ) is equal to the number of people employed ( $N$ ) plus the number of people unemployed ( $U$ ):

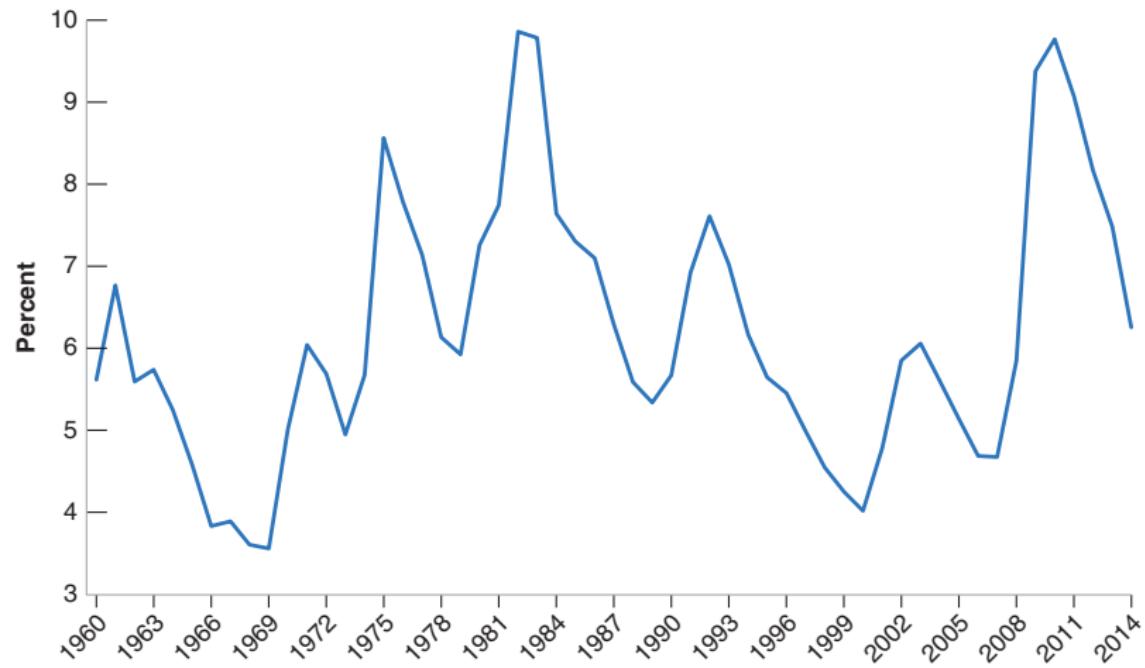
$$L = N + U.$$

- The unemployment rate is the number of people who are unemployed to the number of people in the labor force:

$$u = \frac{U}{L}.$$

- It is hard to assess whether unemployed people are actively looking for a job, an important condition for being considered “in the labor force”.

# US Unemployment Rate



## 1 The class

- General observations
- Tentative (Preliminary) Schedule

## 2 A Tour of the World

- The 2007-2009 US / world Financial Crisis
- The United States
- The Euro Area
- China

## 3 A Tour of the Main Themes

- Aggregate Output
- The Unemployment Rate
- The Short Run, the Medium Run, and the Long Run

## What determines the level of aggregate output

The class is mostly concerned with understanding the level of aggregate output and employment in an economy:

- ① Reading the newspapers suggest a first answer: movements in output come from movements in the **demand for goods**. This is particularly true in the **short run**.
- ② In the **short to medium run**, that is, over an horizon of 1-2 years, prices adjust and inflation reacts to the deviations of output from potential. The central bank may also act in order to restore unemployment to its natural level.
- ③ Most economists agree that in the **medium to long run**, say, a decade, the level of output is only determined by supply factors: the capital stock, the level of technology, and the size of the labor force.
- ④ Finally, in the **long run**, say a few decades or more, what matters is the level of technology, the education system, the patents system, etc. Policies play a role in this too.

# The Short Run (4 lectures)

- ① The Goods Market (Chapter 3)
- ② Financial Markets (Chapter 4)
- ③ Goods and Financial Markets: the IS-LM Model (Chapter 5)
- ④ Financial Markets, Aggregate Demand, and the Crisis (Chapter 6)

## The Medium Run (3 lectures)

- ① The Labor Market (Chapter 7)
- ② The Phillips Curve, the Natural Rate of Unemployment, and Inflation (Chapter 8)
- ③ From the Short to the Medium Run: The IS-LM-PC Model (Chapter 9)

**Midterm Exam: The Short & Medium Run: April 30, 2018**

# The Long Run (4 lectures)

- ① The Facts of Growth (Chapter 10)
- ② Saving, Capital Accumulation and Output (Chapter 11)
- ③ Technological Progress (Chapters 12-13)

# Extensions

- Expectations (Chapters 14-15-16)
- The Open Economy:
  - ▶ Openness in Goods and Financial Markets (Chapter 17)
  - ▶ The Goods Market in an Open Economy (Chapter 18)
  - ▶ Output, the Interest Rate, and the Exchange Rate (Chapter 19)
  - ▶ Exchange Rate Regimes (Chapter 20)
- Back to Policy:
  - ▶ Fiscal Policy (Chapter 21-22)
  - ▶ Monetary Policy: A Summing up (Chapter 23)

**Comprehensive Final Exam: June 14, 2018**

## Suggested Readings / Exercises

- ☞ Chapter 1-2, *Macroeconomics*, 7th Edition, Olivier Blanchard.
  - ☆☆ Exercises 4, 5, and 6, Chapter 2, page 39-40, *Macroeconomics*, 7th Edition, Olivier Blanchard.
  - ☆ Exercise 3, Chapter 2, page 39, *Macroeconomics*, 7th Edition, Olivier Blanchard.
- The Economics of Well Being, *Harvard Business Review*. Link
- G.D.P. R.I.P., *The New York Times*, August 9, 2009. Link
- Keeping up with the Karumes, *The Economist*, October 29th, 2015. Link
- ☞ Abraham, Katharine G. "Distinguished Lecture on Economics in Government-What We Don't Know Could Hurt Us: Some Reflections on the Measurement of Economic Activity." *Journal of Economic Perspectives* 19, no. 3 (September 2005): 3–18. Link
  - ☞ Guerrieri, V., and H. Uhlig. "Chapter 17 - Housing and Credit Markets: Booms and Busts." In *Handbook of Macroeconomics*, edited by John B. Taylor and Harald Uhlig, 2:1427–96. Elsevier, 2016. Link

# Bibliography I

**Blanchard, Olivier**, *Macroeconomics*, Pearson Education, May 2016. Google-Books-ID: 5CB0DAAAQBAJ.

**Guerrieri, V. and H. Uhlig**, "Chapter 17 - Housing and Credit Markets: Booms and Busts," in John B. Taylor and Harald Uhlig, eds., *Handbook of Macroeconomics*, Vol. 2, Elsevier, January 2016, pp. 1427–1496.

**The Financial Crisis Inquiry Commission**, *Financial crisis inquiry report - Final report of the National Commission on the Causes of the Financial and Economic crisis in the United States*, official g ed. 2011.