6048 Macroeconomics

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6048 Macroeconomics

- Literature:
  - *Macroeconomics*, 5th edition, Olivier Blanchard
  - www.prenhall.com/blanchard

Structure and Examination

- Course structure:
  - 54 hours of lectures and 8 hours of exercise classes.
- Examination:
  - Written exam: general exam
  - The exam consists of **5 questions**.
  - On January and February sessions, students are expected to answer 4 common questions and 1 question personalized by their class' teachers.

Structure and Examination

- Information:
  - E-Learning platform. The link is the following: *http://www.unibocconi.it/asit/weblearning/onlinecourses/index.htm*
- Also see teacher's homepage for lecture notes and more exercises.

Today's class

- Introduction to macroeconomies (Chapter 1).
  - United States and Europe.
- A short introduction macroeconomic variables (Chapter 2).
  - Aggregate output (GDP), Unemployment rate and Inflation rate.

What is macroeconomics?

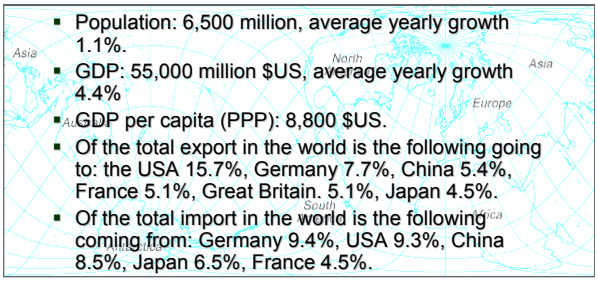
- How economies work (nations, regions or the whole world).
- Variables:
  - Income
  - Production
  - Consumption
  - Investments
  - Unemployment
  - interest rate
  - exchange rate and prices

  – the macroeconomic aggregates.

What is macroeconomics?

- Central in modern macro
  - Twoway (circular) relationships.
    E.g.: Production → Employment → Income → Demand → Production
  - General equilibrium:
    If something happen in a market, this also affects prices and behaviours on other markets.
  - Individuals choose their behavioural in a non-random way (optimizing).
  - Empirical connection.

The world in 2004



- Population: 6,500 million, average yearly growth 1.1%.
- GDP: 55,000 million $US, average yearly growth 4.4%
- GDP per capita (PPP): 8,800 $US.
- Of the total export in the world is the following going to: the USA 15.7%, Germany 7.7%, China 5.4%, France 5.1%, Great Britain. 5.1%, Japan 4.5%.
- Of the total import in the world is the following coming from: Germany 9.4%, USA 9.3%, China 8.5%, Japan 6.5%, France 4.5%.

Sources:
Blanchard
CIA world fact
OECD Econ outlook
Eurostat

The United States

- Three important variables to look at when studying an economy:
  - Output:
    - The level of production of the economy
  - The unemployment rate
    - The proportion of workers in the economy who are not employed but looking for a job
  - The inflation rate
    - The rate at which average price of goods is increasing

The United States

Table 1-1 Growth, Unemployment, and Inflation in the United States Since 1970

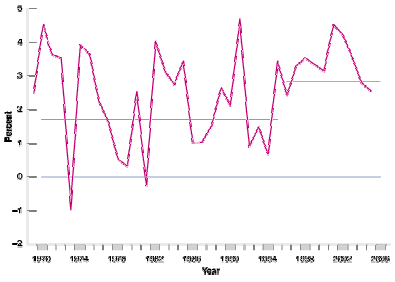
	1970–2006 (average)	1996–2006 (average)	2006	2007	2008
Output growth rate	3.1%	3.4%	3.3%	2.1%	0.43
Unemployment rate	6.2	5.0	4.6	4.6	
Inflation rate	4.0	2.0	2.9	2.6	

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).

- **The period 1996-2006 was historically a very good period:**
  - High average rate of growth.
  - Low average unemployment rate.
  - Low average inflation rate.
- But now… halfway through 2009 – negative growth rate…- worst recession in 75 years.

Rate of growth in United States up to 2006

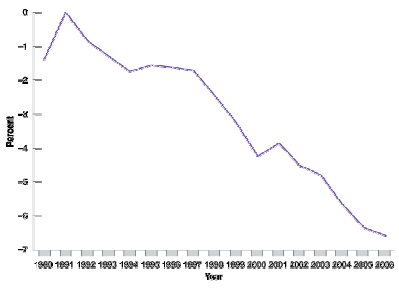
Rate of Growth of Output per Hour in the United States Since 1960.



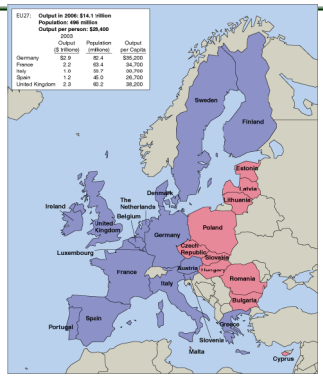
The U.S. Trade Deficit

The U.S.Trade Deficit Since 1990

The trade deficit increased from about 1% of output in 1990 to about 6% of output in 2006.



The European Union



The European Union

Table 1-2 Growth, Unemployment, and Inflation in the Five Major European Countries Since 1970

	1970–2006 (average)	1996–2006 (average)	2006	2007	2008
Output growth rate	2.3%	2.0%	2.7%	2.6%	0.9%
Unemployment rate	7.4	8.7	7.6	7.0	7.8
Inflation rate	5.4	1.8	1.7	1.8	3.7

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).

The EU during the last 10 years

- Europe performed worse than the USA in the 1990s, especially after 1995.
  - Lower output growth.
  - Lower productivity growth.
  - Low output growth has been accompanied by persistently high unemployment.
- Now: output growth is decreasing, unemployment increasing…

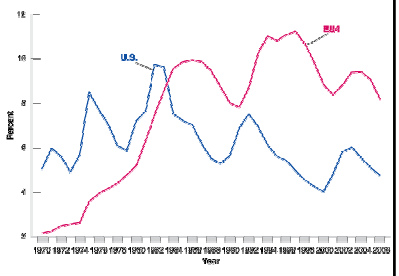
The European Union

Two issues dominate the agenda of European macroeconomists:

- High unemployment
- Common currency

How Can European Unemployment Be Reduced?

Unemployment Rates: Continental Europe Versus the United States Since 1970



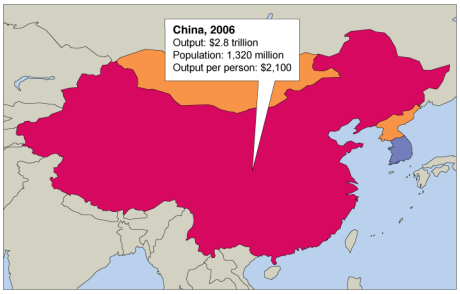
How can European unemployment be reduced?

- Potential causes of high European unemployment:
  - Politicians often blame macroeconomic policy (too high interest rates => low demand).
  - Labor market institutions (but what???).
  - Labor market rigidities (unemployment benefits, minimum wages etc).
    - But, many of these "labor market rigidities" were already in existence in the 1960s, when unemployment was very low.
  - Not all countries in Europe has high unemployment.

What Will the Euro Do for Europe?

- Supporters of the Euro point first to its enormous symbolic importance.
- Others worry that the symbolism of the euro may come with some economic costs.

China



China

Table 1-3 Growth and Inflation in China Since 1980

	1980–2006	1996–2006	2006	2007
Output growth rate	9.3%	8.8%	10.7%	10.0%
Inflation rate	5.4	3.3	1.5	2.5

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

At this rate of output growth, output doubles every 7th year.

Finding macro data

- International organizations, such as the **Organization for Economic Cooperation and Development** (OECD), gather data for the richest countries.
  - http://www.sourceoecd.org/
- For countries that are not members of the OECD, one of the main sources of information is the International Financial Statistics (IFS), published by the **International Monetary Fund** (IMF).
  - http://www.imf.org/

Chapter 2

Important macroeconomic variables:

- What is aggregate output, GDP (Gross Domestic Product), and how is it measured?
- What is inflation and how is it measured?
- What is unemployment and how it is measured?

Aggregate output

- **National income and product accounts:** an accounting system to measure aggregate economic activity.
- The measure of **aggregate output** in the national income accounts is **gross domestic product** (**GDP**).

Gross Domestic Product

- Three ways of defining GDP:

1. **GDP is the value of the final goods and services produced in an economy during a given period (a year).**
   - A **final good** is a good that is used for final consumption (e.g. hamburger or car).
   - An **intermediate good** is a good used in the production of another good (e.g. the bakery which sells the bread to the burger).

Gross Domestic Product

2. **GDP is the sum of value added in the economy during a given period.**
   - **Value added** equals the value of a firm's production minus the value of the intermediate goods it uses in production.

Gross Domestic Product

3. **GDP is the sum of all incomes (to labor and capital) in the economy during a given period.**

Gross Domestic Product

Table 2-1 The Composition of GDP by Type of Income, 1960 and 2006

	1960	2006
Labor income	66%	64%
Capital income	26%	29%
Indirect taxes	8%	7%

Nominal GDP

- **Nominal GDP** is the sum of the quantities of final goods produced times their *current* price.
  - Nominal GDP increases over time because:
    1. The production of most goods increases over time.
    2. The prices of most goods also increase over time.

Real GDP

- **Real GDP** is the sum of the quantities of final goods times *constant* prices, i.e. the prices the goods had in year 2000.
- **Notation:**
  - Y_t: real GDP in year t (e.g. year 2004).
  - $\$Y_t$: nominal GDP in year t.

Nominal and Real GDP

Year	Quantity of Cars	Price of cars	Nominal GDP	Real GDP (in 2000 dollars)
1999	**10**	**$20,000**	**$200,000**	**$240,000**
2000	**12**	**$24,000**	**$288,000**	**$288,000**
2001	**13**	**$26,000**	**$338,000**	**$312,000**

- **Real GDP – use a *common* price (here: price in 2000).**

GDP Growth

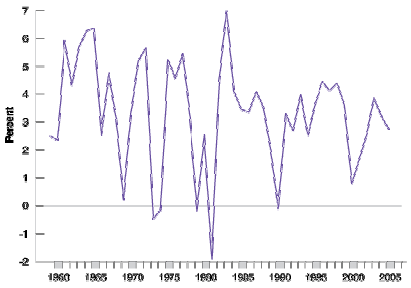
- **GDP growth**: % change in (real) GDP:

$$\frac{(Y_t - Y_{t-1})}{Y_{t-1}}$$

- Positive GDP growth: **expansions**.
- Negative GDP growth: **recessions**.
- A long period of low GDP growth: **depression.**

GDP Growth

Growth Rate of U.S. GDP Since 1960



Why care about GDP?

- GDP measures wealth in the economy.
- ≈ "welfare"
- But no perfect measure of welfare:
  - neglects income distribution
  - neglects natural resources

Unemployment

- Unemployment = number of people who do not have a job, but who are *actively* searching.
- ***labor force*** = employment + unemployment

$$L = N + U$$

The unemployment rate

- ***Unemployment rate*** = $\frac{\text{number of unemployed}}{\text{total labor force}}$

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

Labor market definitions

- **Employed:** the person has a job
- **Unemployed**: do not have a job (AND are actively looking for a job)
- **Not in the labor force:** those not working AND are not looking for work are.
- **Discouraged workers:** People without jobs who give up looking for work.

- **Participation rate** $= \dfrac{labor\ force}{population\ of\ working\ age}$

The unemployment rate

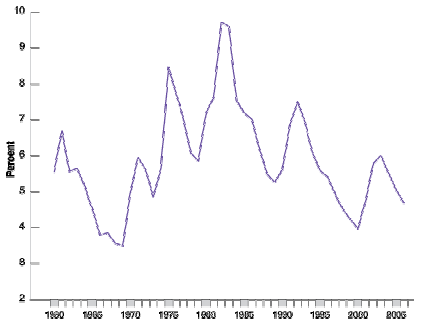
- Example:
- Population (working age): 293 million
  Employed: 137.7 million
  Unemployed: 8.8 million
- U= ; L=
- Calculate the unemployment rate:

- Participation rate:

The unemployment rate

U.S. Unemployment Rate Since 1960

Since 1960, the U.S. unemployment rate has fluctuated between 3% and 10%, going down during expansions and going up during recessions.



Why care about unemployment?

- Because of its direct effects on the welfare of the unemployed.
- Indicator of economic activity: below or above long-run level used to determine policy: *u* "too high" or *u* "too low" → adjust policy.
- It signals that the economy may not be using some of its resources efficiently.

Inflation

- **Inflation:** a sustained *rise* in the general level of prices - the price level.
- **Inflation rate:** the rate at which the price level increases.
- **Deflation:** a sustained decline in the price level.

Measures of the price level

1. **The GDP deflator:** average price of goods and services *produced* (from the national accounts).
2. **The Consumer Price Index**: average price of goods and services *consumed*. Survey of prices facing consumers.

The GDP deflator

- GDP deflator in year t, P_t, is defined as the ratio of nominal GDP to real GDP in year *t*:

$$P_t = \frac{nominal\ GDP_t}{real\ GDP_t} = \frac{\$Y_t}{Y_t}$$

- **Index numbers:** set to 1 (or 100) in arbitrary year ("base year" e.g. 2000)
- Nominal GDP is equal to the GDP deflator times real GDP:

$$\$Y_t = P_t Y_t$$

- In base year: $P_t = 1$ so $Y_t = \$Y_t$

The consumer price index

- The Consumer Price Index gives the cost in dollars of a *consumption basket* of a typical urban consumer.
- CPI = weighted average of prices
- The set of goods produced in the economy is not the same as the set of goods purchased by consumers for two reasons:
  - Some of the goods are sold to firms, the government, or to foreigners.
  - Some of the goods are not produced domestically but are imported from abroad.

The consumer price index

- Example: Economy with two goods
- People spend 40% of income on food and 60% on clothes

Year	Price of food	Price of clothes	CPI	Inflation rate
1	5	10		
2	7	11		
3	8	11		

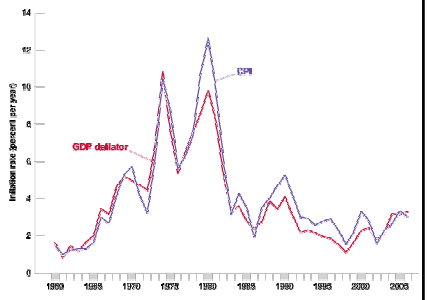
Inflation

- Inflation = The rate of change in the GDP deflator

$$\prod_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

CPI and GDP-deflator in USA

U.S. Inflation Rate, Using the CPI and the GDP Deflator Since 1960



Why care about inflation?

- If all prices increased together and everybody was aware of it, small cost of inflation.
- However:
  - Some prices increase faster than others
  - All wages do not increase at the same time (real wages vary)
  - All people are not aware of the rate of inflation
- Costs of inflation.
  - Inflation affects the income distribution
  - Uncertainty about future prices
  - Very high inflation (hyperinflation: >50% per month) detrimental – people stop using money.