Macroeconomics
Seminar 1

The data of Macroeconomics

- Economics is a science – it is necessary to confront the predictions of theories and models with reality
- Work with data about the situation in economy

- Statistical databases on the web provide a huge amount of data for free
  - National database
  - International database

National database

National statistical offices

unstats.un.org/unsd/methods/inter-natlinks/sd_natstat.asp

National central banks

www.bis.org/cbanks.htm

In the Czech Republic

ČSÚ - www.czso.cz

ČNB – www.cnb.cz/cs/statistika/

International database (1)

EUROSTAT

- ec.europa.eu/eurostat
- EU states + EFTA + Croatia, Turkey, US, Japon

OECD

- stats.oecd.org
- Member states of OECD + China, India, Indonesia, Russia, JAR

World bank

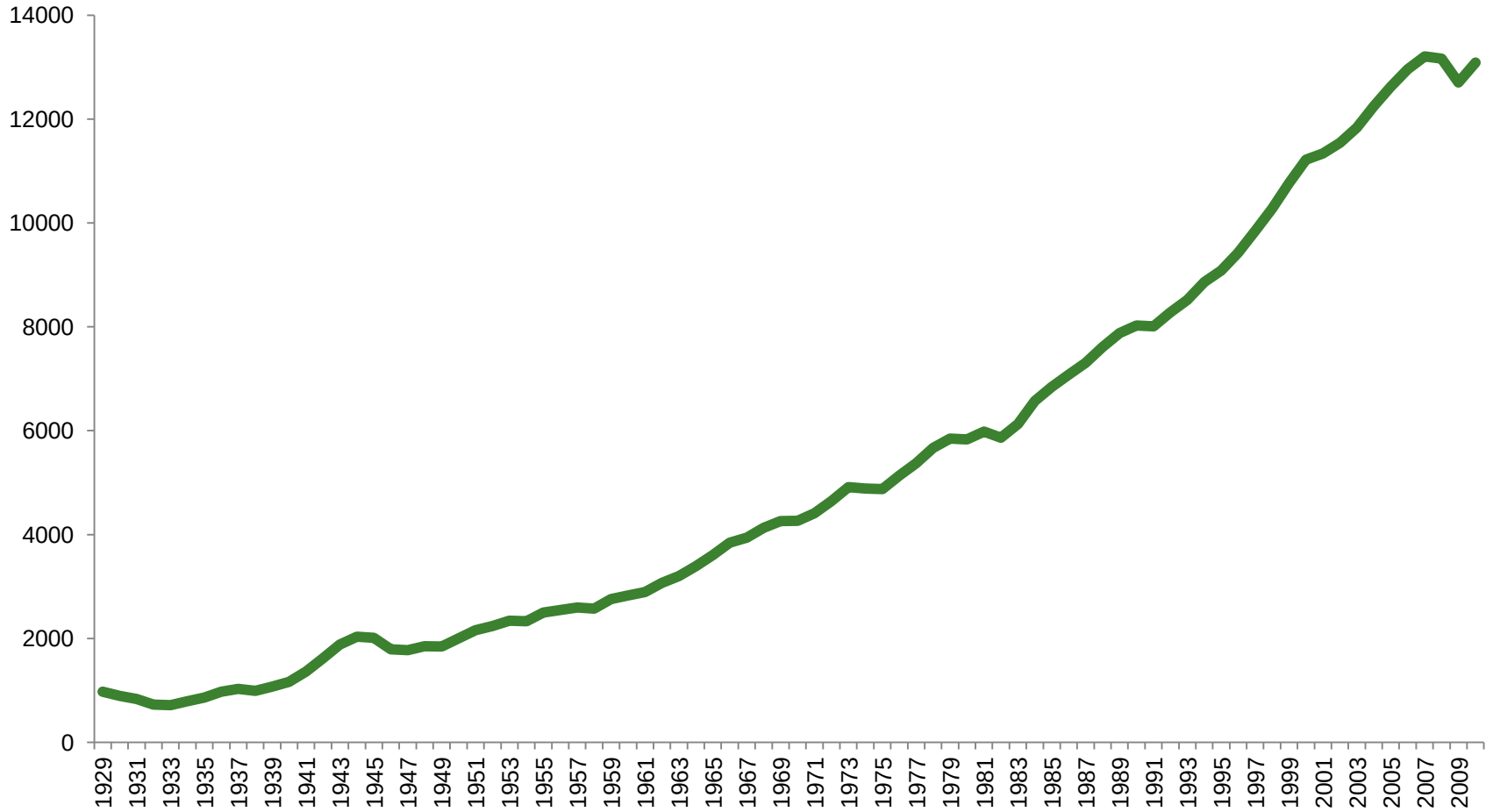
- data.worldbank.org/

The historical performance of the US and Czech economy

The data of Macroeconomics

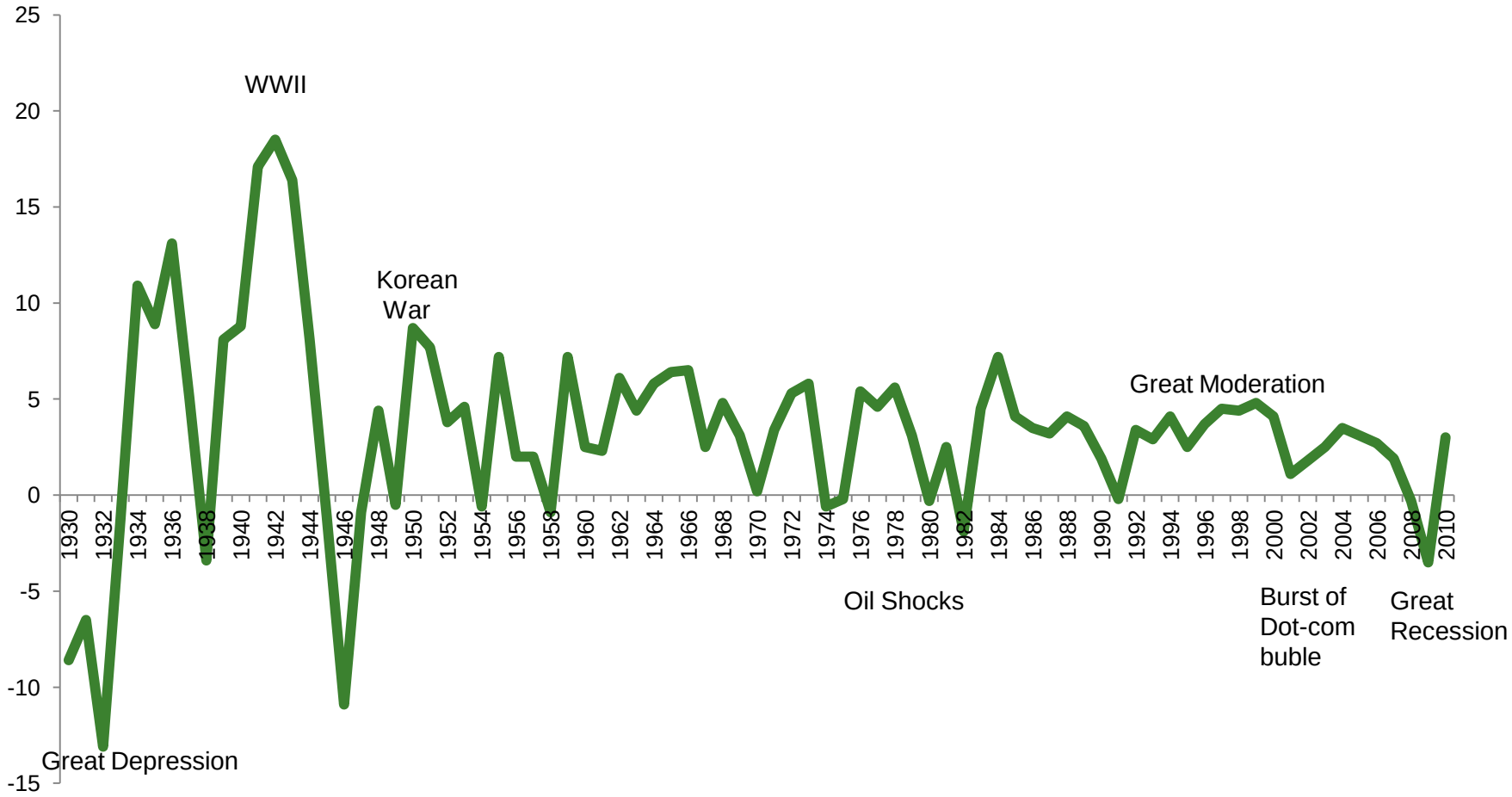
- Many types of data to measure the performance of economy
- Three macroeconomic variables are especially important:
  - Real GDP – total income of everyone in economy
  - Inflation rate – how fast prices are rising
  - Unemployment rate – the fraction of the labor force out of work
  - How are they determined? Why do they change over time? How do they interact?

U.S. Real GDP, 1929-2010



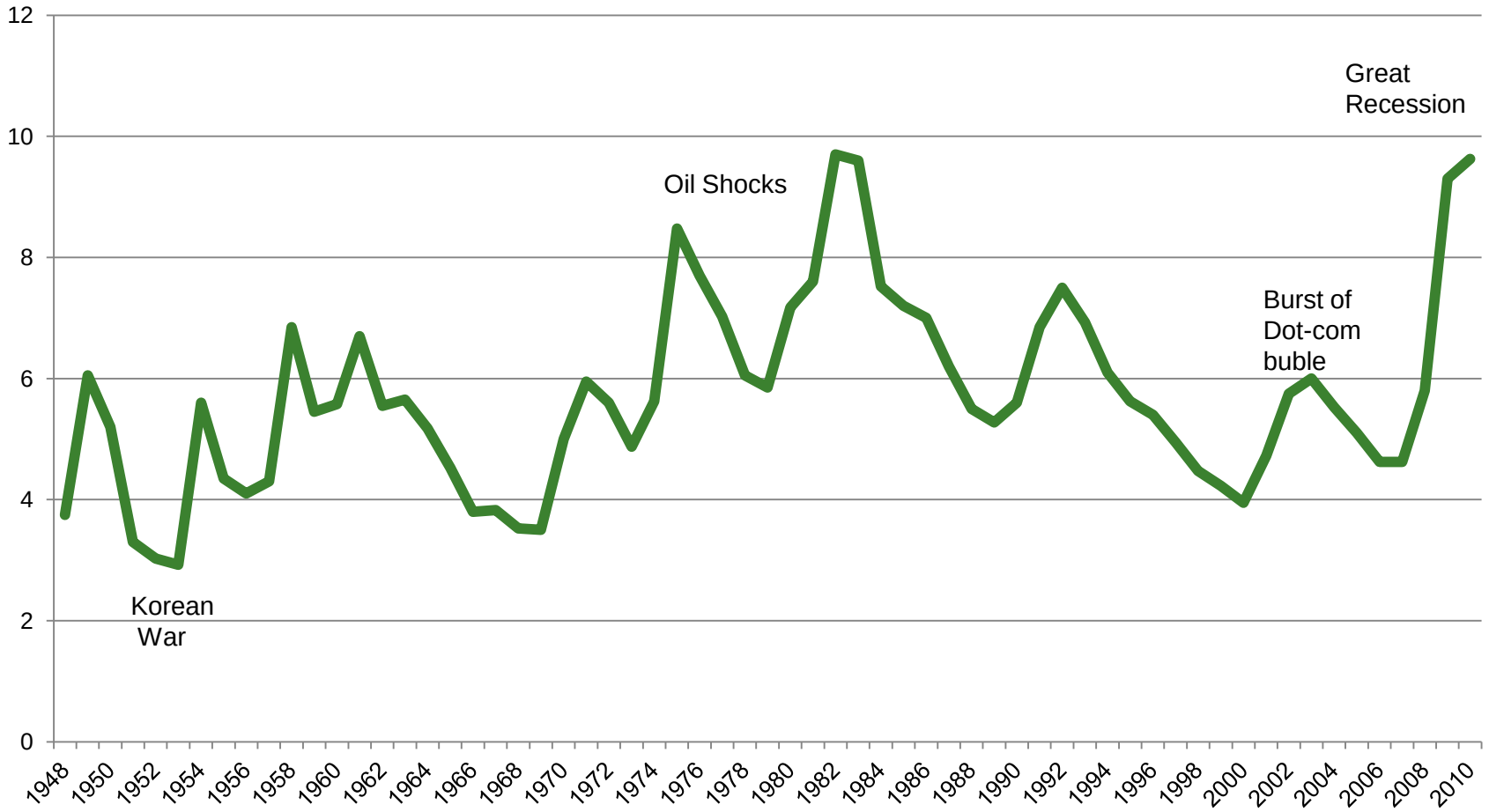
Billions of chained 2005 USD, Source: Bureau of Economic Analysis

Growth Rate of US Real GDP



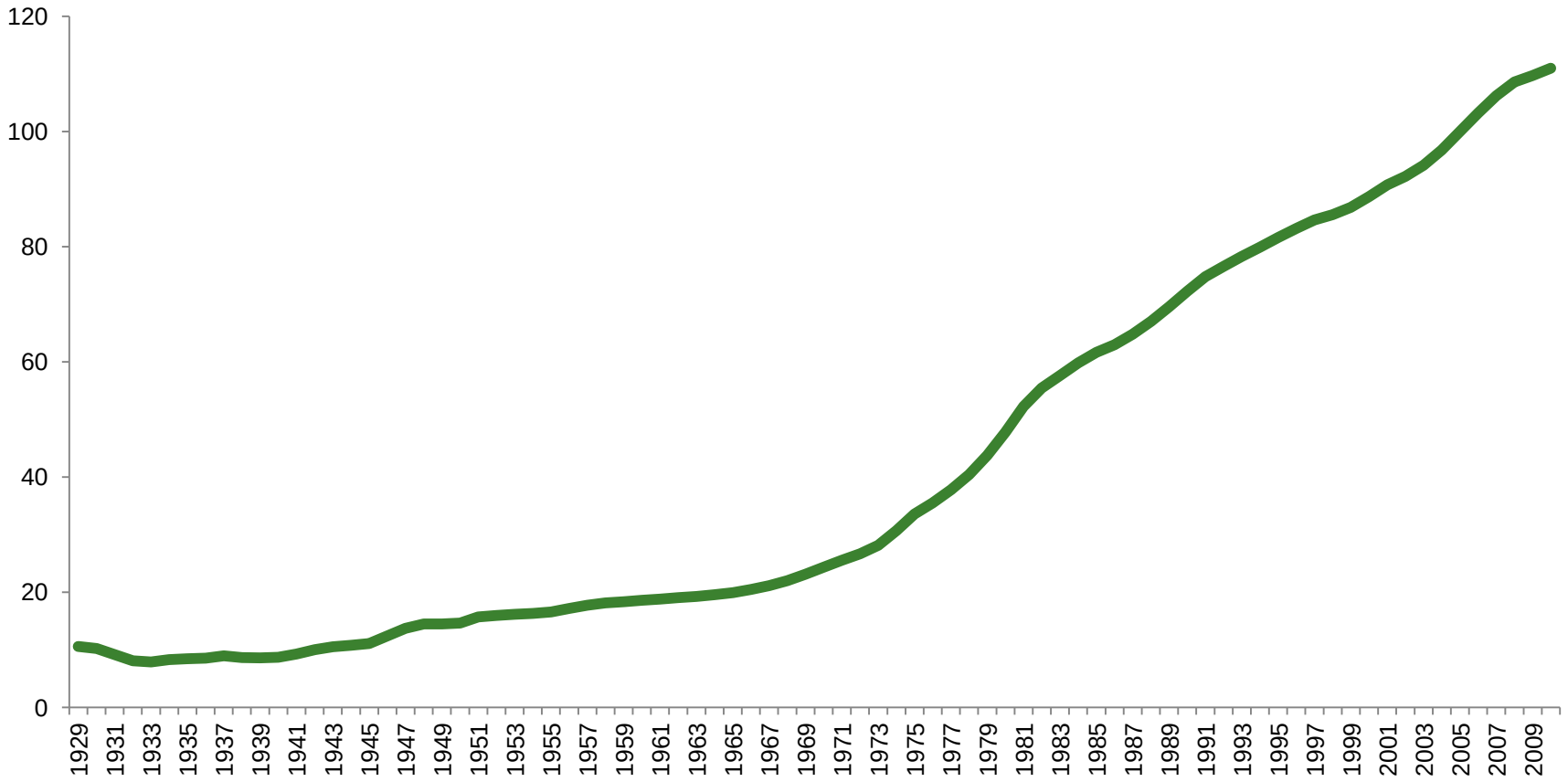
Annual percentage growth rate, Source: Bureau of Economic Analysis

U.S. Unemployment rate



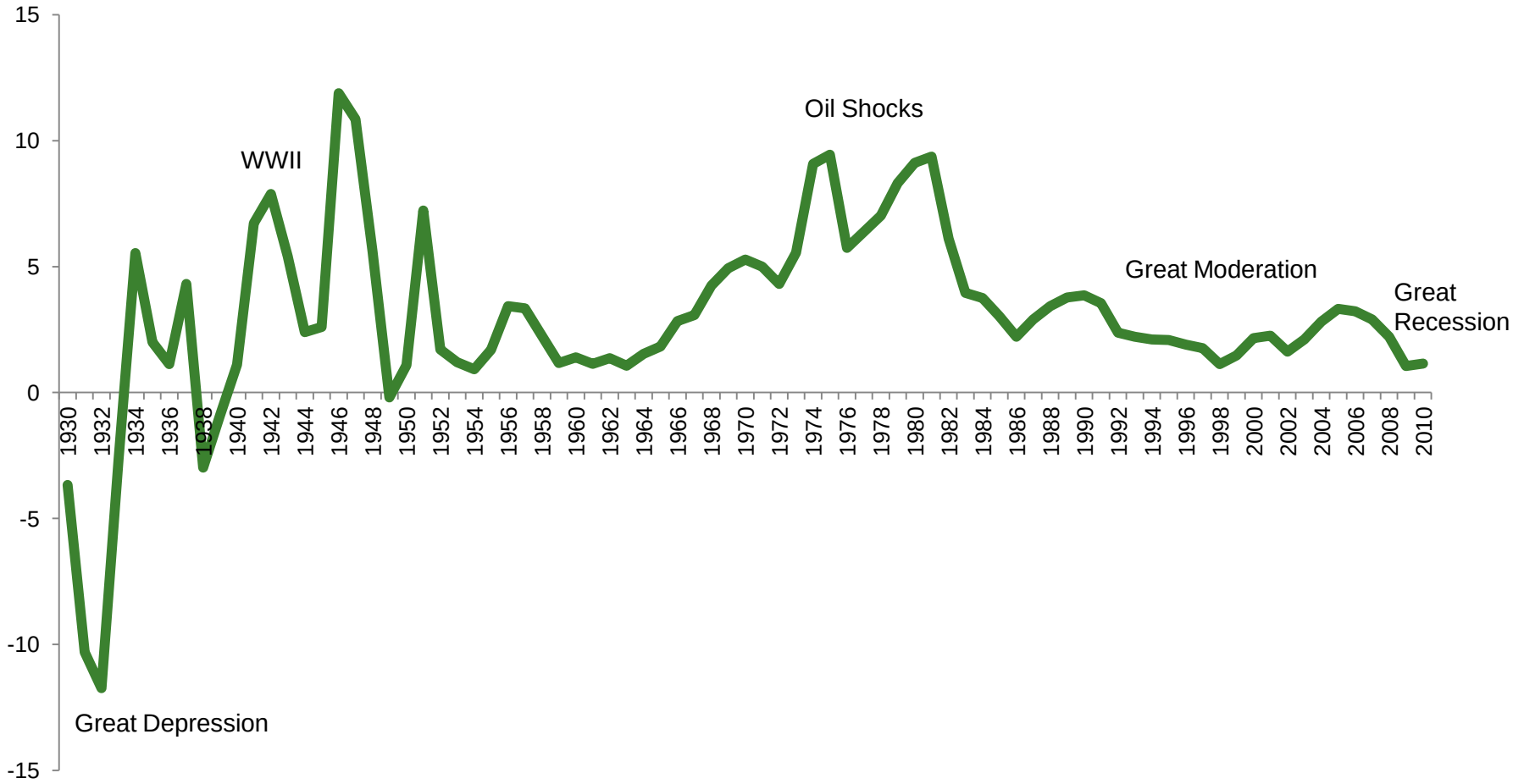
Source: Bureau of Labor Statistics

U.S. Price level



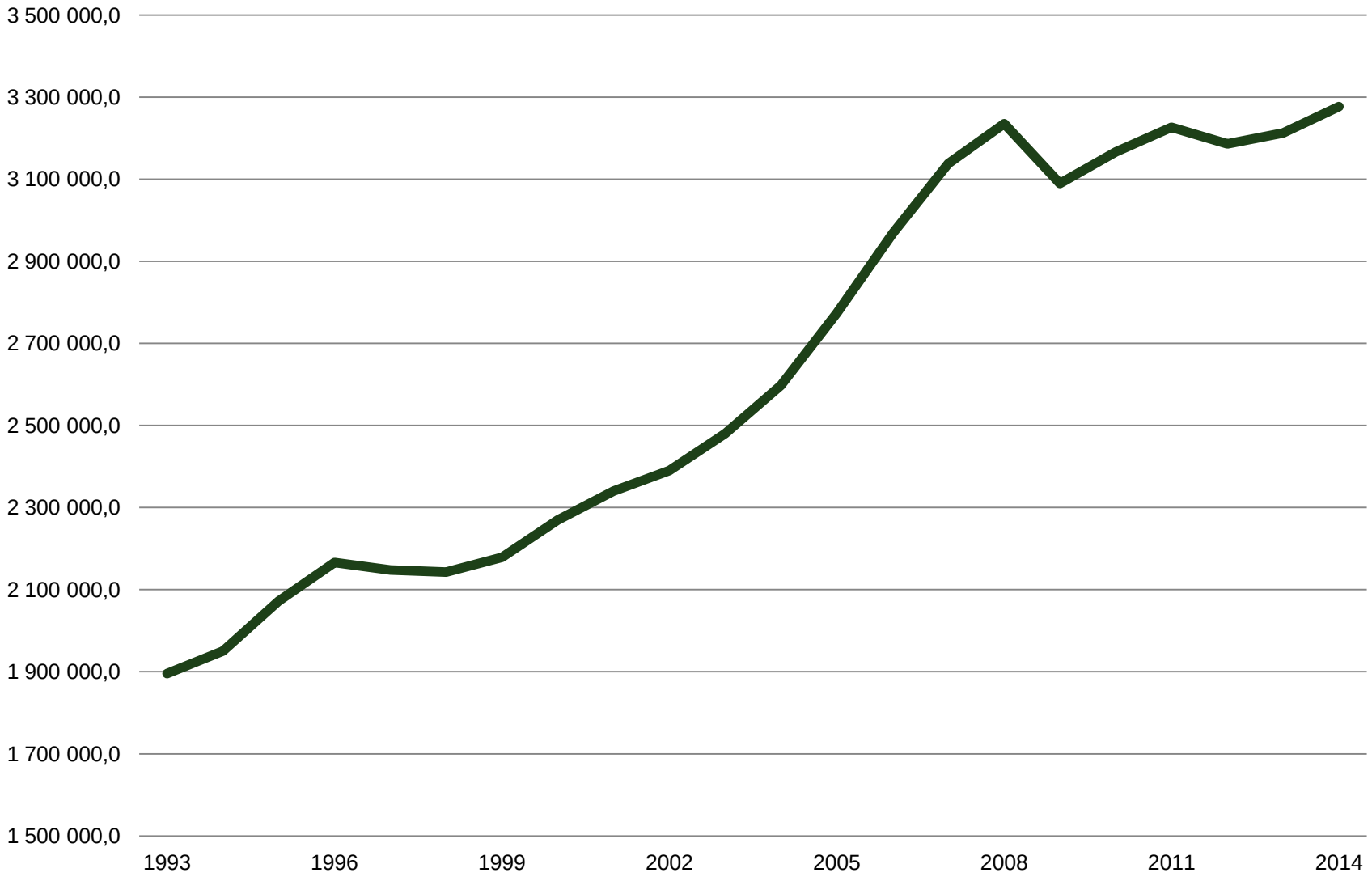
GDP Deflator (2005=100), Source: Bureau of Economic Analysis

U.S. Inflation rate

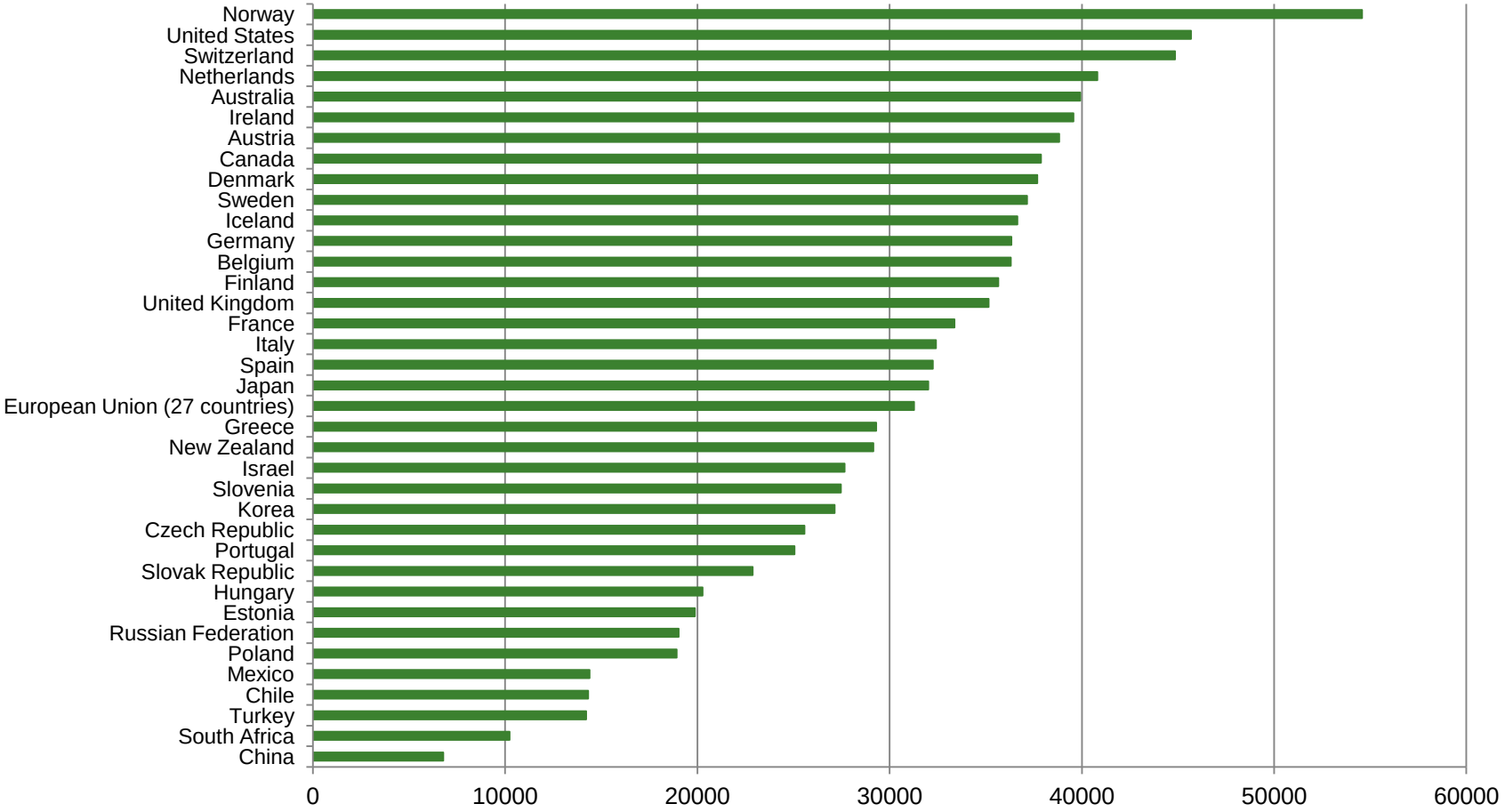


Annual peccentage change in inflation based on GDP Deflator (2005=100), Source: Bureau of Economic Analysis

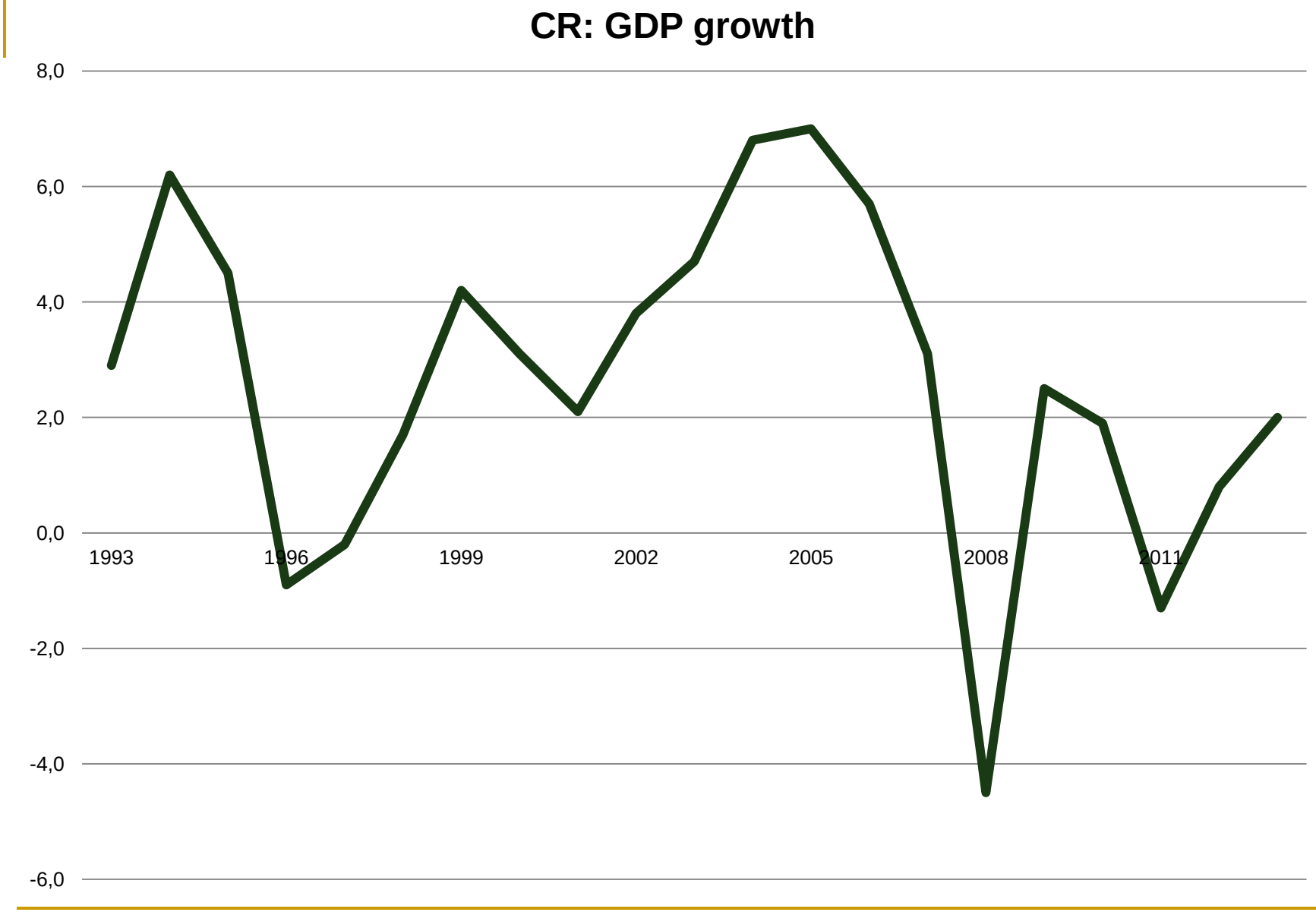
CR: Real GDP (prices in 2005)



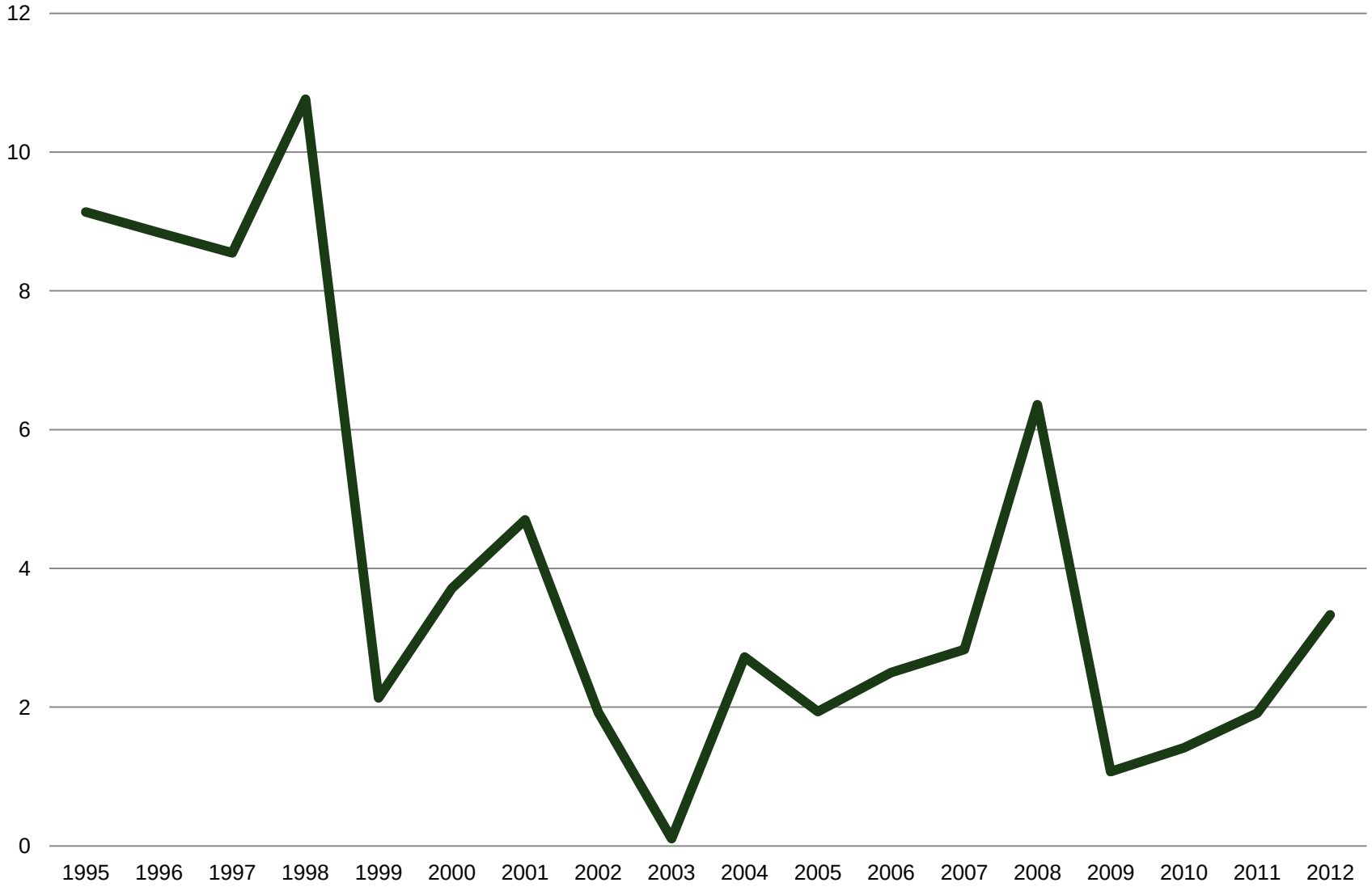
Comparison of GDP per capita in selected countries (2009)

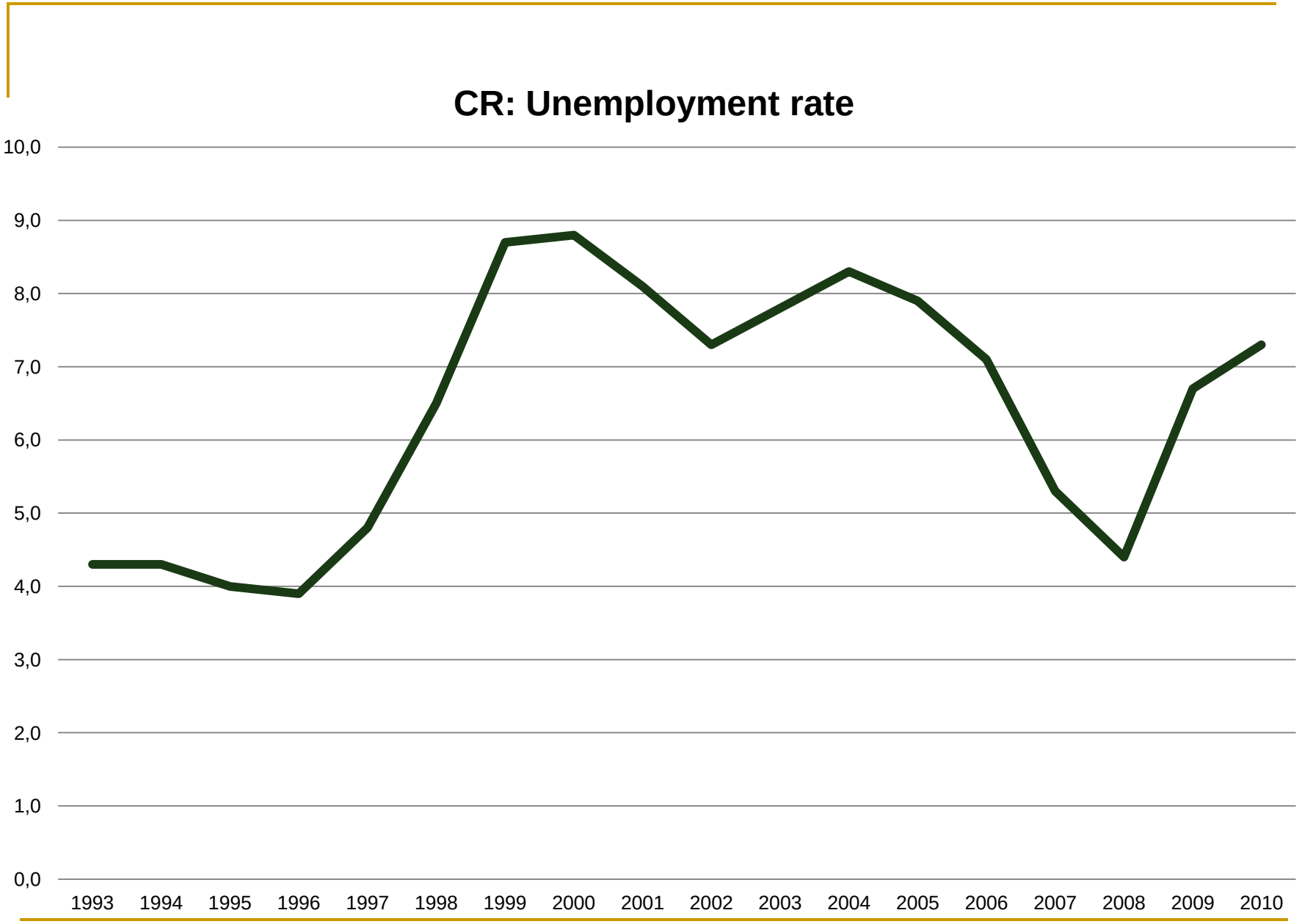


Current USD in PPP exchange rate, Source: OECD


CR: GDP growth
8,0
6,0
4,0
2,0
0,0
-2,0
-4,0
-6,0
1993
1996
1999
2002
2005
2008
2011

CR: Inflation rate (CPI)




CR: Unemployment rate
10,0
9,0
8,0
7,0
6,0
5,0
4,0
3,0
2,0
1,0
0,0
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010

National accounting

Exercises

Exercises

1. Define: GDP, GNP, NDP and NDI

2. State 3 approaches to measuring GDP

3. Explain the formula for GDP:

   Y = C + I + G + NX

Real vs. Nominal GDP

Prices and Quantities

Year	Price of Hot Dogs	Quantity of Hot Dogs	Price of Hamburgers	Quantity of Hamburgers
2010	$1	100	$2	50
2011	$2	150	$3	100
2012	$3	200	$4	150

Calculating Nominal GDP

2010	($1 per hot dog × 100 hot dogs) + ($2 per hamburger × 50 hamburgers) = $200
2011	($2 per hot dog × 150 hot dogs) + ($3 per hamburger × 100 hamburgers) = $600
2012	($3 per hot dog × 200 hot dogs) + ($4 per hamburger × 150 hamburgers) = $1,200

Calculating Real GDP (base year 2010)

2010	($1 per hot dog × 100 hot dogs) + ($2 per hamburger × 50 hamburgers) = $200
2011	($1 per hot dog × 150 hot dogs) + ($2 per hamburger × 100 hamburgers) = $350
2012	($1 per hot dog × 200 hot dogs) + ($2 per hamburger × 150 hamburgers) = $500

Calculating the GDP Deflator

2010	($200 / $200) × 100 = 100
2011	($600 / $350) × 100 = 171
2012	($1,200 / $500) × 100 = 240

Exercises

The economy is characterized by:

- Private Consumption expenditure = 4000 units
- Gross Investment expenditures (both private and government) = 500 units
- Government Consumption expenditures = 800 units
- Exports = 4200 units
- Imports = 4500 units
- Depreciation = 100 units
- Primary incomes receivables from the Rest of the World = 80 units
- Primary incomes payable to the Rest of the World = 200 units

Compute:

Gross Domestic Product =4000+500+800+4200-4500=5000

Net Domestic Product = 5000 – 100 = 4900

Gross National Product (Income) = 5000 + 80 – 200 = 4880

Exercises

If the Nominal GDP is $1.6 trillion, and the Real GDP is $1.0 trillion, the GDP deflator is:

a.160

b.62.5

c.60

d.37.5

Exercises

If Nominal GDP increased from $1.0 trillion in 2000 to $1.2 in 2005, we:

a. can say that output increased by 20% in the economy through that period.

b. can say that prices increased by 20% in the economy through that period.

c. don't have enough information from this to determine how much output actually increased in the economy.

d. can say that output increased by 20% in the economy compared to the base year.

Exercises

Which of the following are expenditures included in the calculation of the Gross Domestic Product?

i. Investment.
ii. Government Purchases.
iii. Net Exports.
iv. Consumption.

a. only ii, iii, and iv

b. only i, ii, and iii

c. only i, iii, and iv

d. all four

Exercises

- Which of the following items should be excluded from GDP for year 1999:
  1. Skoda Fabia produced in 1999 and sold in 2000
  2. Sales from theatre performances in 1999
  3. Real estate agency activity in 1999
  4. A house constructed in 1998 and sold in 1999
  5. All above should be part of GDP for 1999
- Negative gross investment in GDP:
  1. Is not possible
  2. Is possible if there are large depreciations
  3. Can be achieved when the stock of inventories drops significantly during the year
  4. Is achieved when the economy produces more then consumes

The measurement of CPI

Exercises

Step 1: Fixed basket of goods: 4 hot dogs, 2 hamburgers

Step 2: Price of each good in each year

Year	Price of Hot Dogs	Price of Hamburgers
2001	1	2
2002	2	3
2003	3	4

Step 3: Compute the Cost of the Basket of Goods in Each Year

2001	($1 per hot dog × 4 hot dogs) + ($2 per hamburger × 2 hamburgers) = $8
2002	($2 per hot dog × 4 hot dogs) + ($3 per hamburger × 2 hamburgers) = $14
2003	($3 per hot dog × 4 hot dogs) + ($4 per hamburger × 2 hamburgers) = $20

Step 4: Choose One Year as a Base Year (2001) and Compute the Consumer Price Index in Each Year

2001	($8/$8) × 100 = 100
2002	($14/$8) × 100 = 175
2003	($20/$8) × 100 = 250

Step 5: Use the Consumer Price Index to Compute the Inflation Rate from Previous Year

2002	(175 − 100)/100 × 100 = 75%
2003	(250 − 175)/175 × 100 = 43%

Exercises

Suppose the cost of the basket in 2005 was $3,300, and the cost of the basket in the base year was $3,000. Find the CPI for 2005.

a.10

b.909

c.110

d.11

Exercises

Suppose the CPI at the end of 2004 was 150 and the CPI at the end of 2005 was 165. Calculate the inflation rate for 2005.

a.15%

b.10%

c.65%

d.20%

Exercises

Suppose the cost of the basket at the end of 2002 was $5,500, and at the end of 2003 it was $5,775. If the cost of the basket in the base year was $1,000, find the inflation rate for 2003.

a.27.5%

b.25.0%

c.10.0%

d.5.0%

Exercises

If John earned $30,000 in 1990, how much would that be worth in today's dollars? Suppose the CPI was 160 in 1990 and is 220 today.

a.$21,818

b.$50,000

c.$41,250

d.$11,250

Exercises

Which of the following statements is true?

a. The GDP deflator considers only a basket of goods, while the CPI considers everything produced.

b. The GDP deflator includes imports, while the CPI does not.

c. The GDP deflator uses a fixed bundle of goods, while the CPI uses a changing bundle of goods.

d. The GDP deflator measures the inflation of everything produced in the nation, while the CPI measures the inflation of the goods typically bought by households.

Exercises

According to the surveys of the Bureau of Labor Statistics, the biggest spending item of households is:

a.food and beverages.

b.housing.

c.transportation.

d.medical care.